PIT AND QUARRY

JUNE 1953

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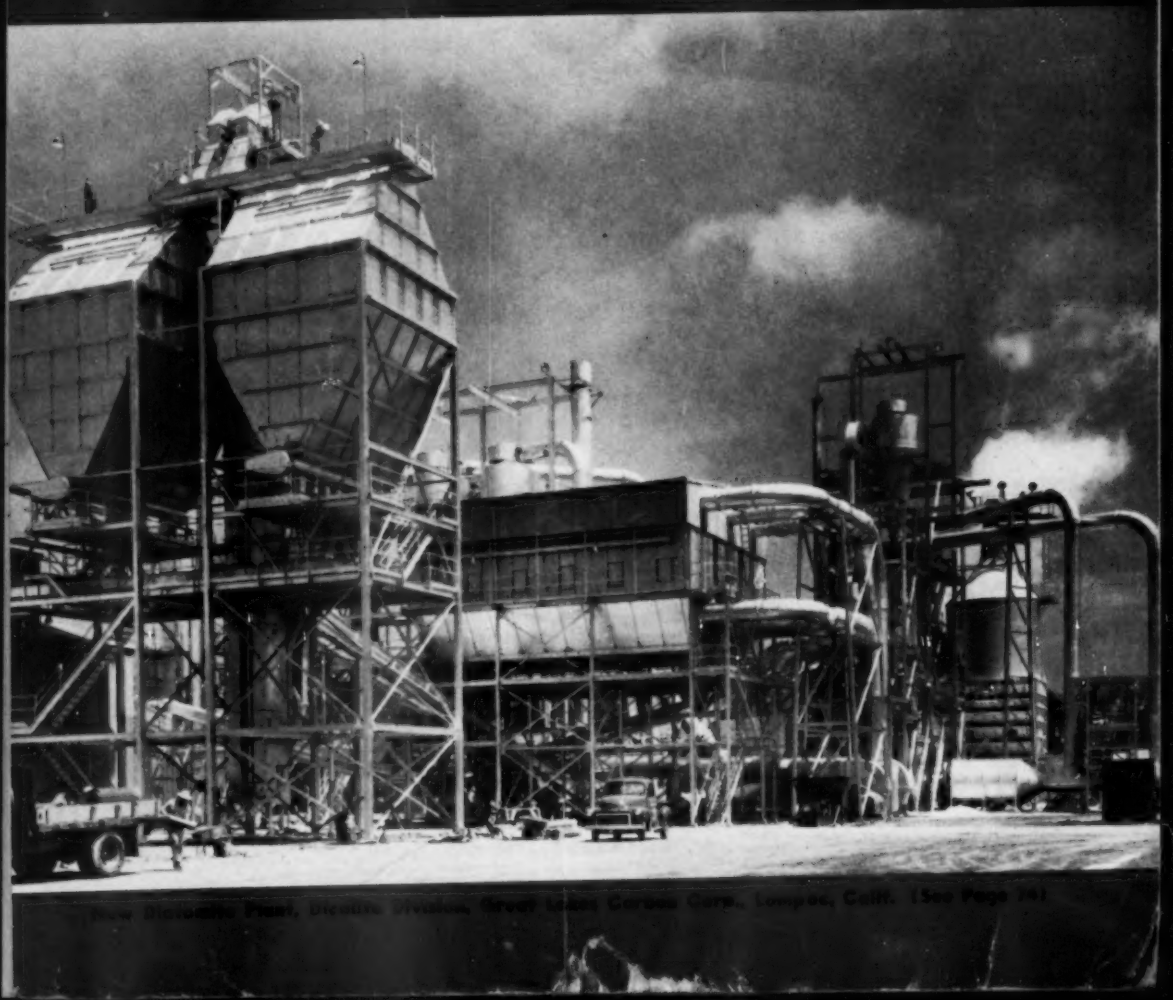
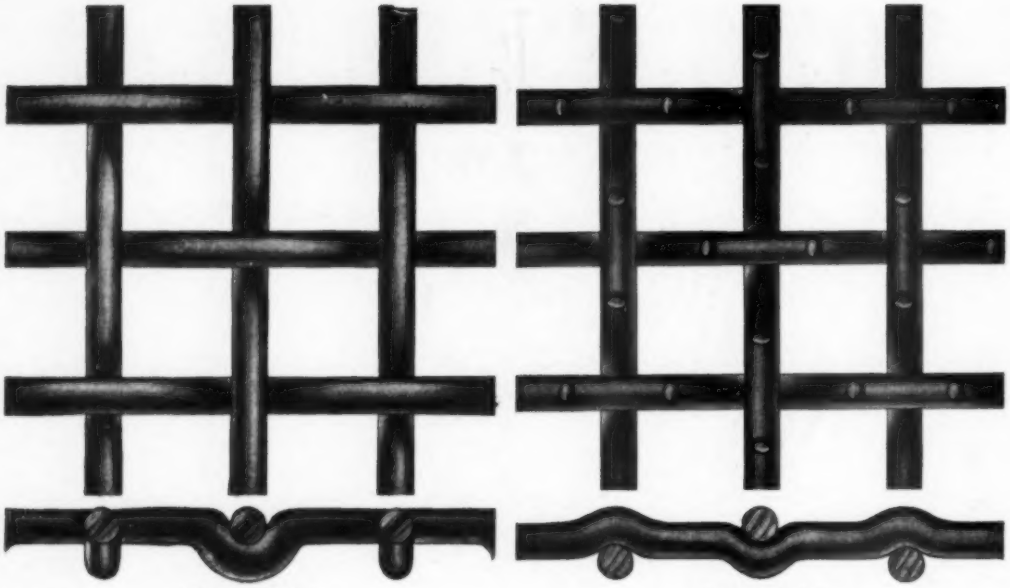


New Bituminite Plant, Dicalite Division, Great Lakes Carbon Corp., Lompoc, Calif. (See Page 74)



STA-SMOOTH *ARCH-CRIMP*

SUPER-LOY VIBRATING-SCREEN SECTIONS

SUPER - HARD - - - SUPER - TOUGH - - - SUPER - STRONG

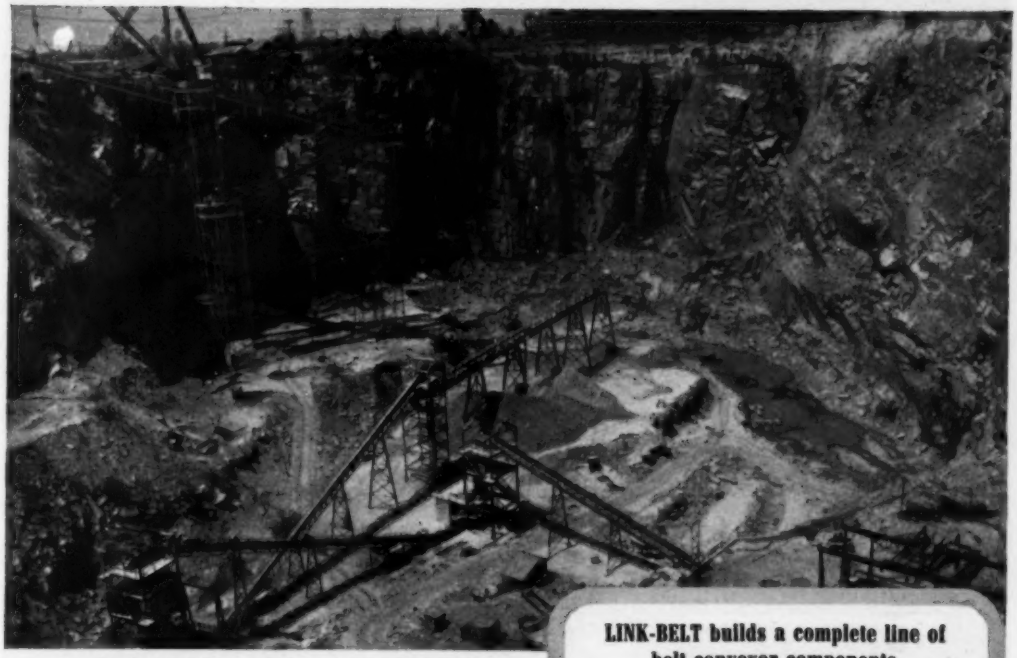
SUPER - LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost

ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

THE LUDLOW-SAYLOR WIRE COMPANY

634 S. Newstead Ave. **ST. LOUIS 10, MO.**

TOTAL ENGINEERING



Complete Link-Belt "circular stairway" belt conveyor system elevates 500 TPH of minus 3½-in. stone to sizing house, located 250-ft. above quarry floor.

It's your assurance of top efficiency with LINK-BELT belt conveyors

HERE'S how "total engineering" works for you when you use Link-Belt Belt Conveyors. First, Link-Belt conveyor engineers analyze your needs—then recommend the *right* components. In addition, Link-Belt can supply all related equipment — other types of conveyors, feeders, elevators, car dumpers and shakers. And Link-Belt will build your supporting structures and enclosures . . . install the job completely, if desired. Call the Link-Belt office near you for any engineering assistance you need.

LINK-BELT builds a complete line of belt conveyor components

ALL TYPES OF ROLLER BEARING IDLERS

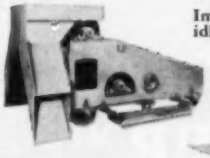
Return idler

20° troughed idler

Belt-training idler

45° troughed idler

Impact-cushioning idler



BELT AND MOTOR PROPELLED TRIPPERS

COMPLETE TERMINAL MACHINERY

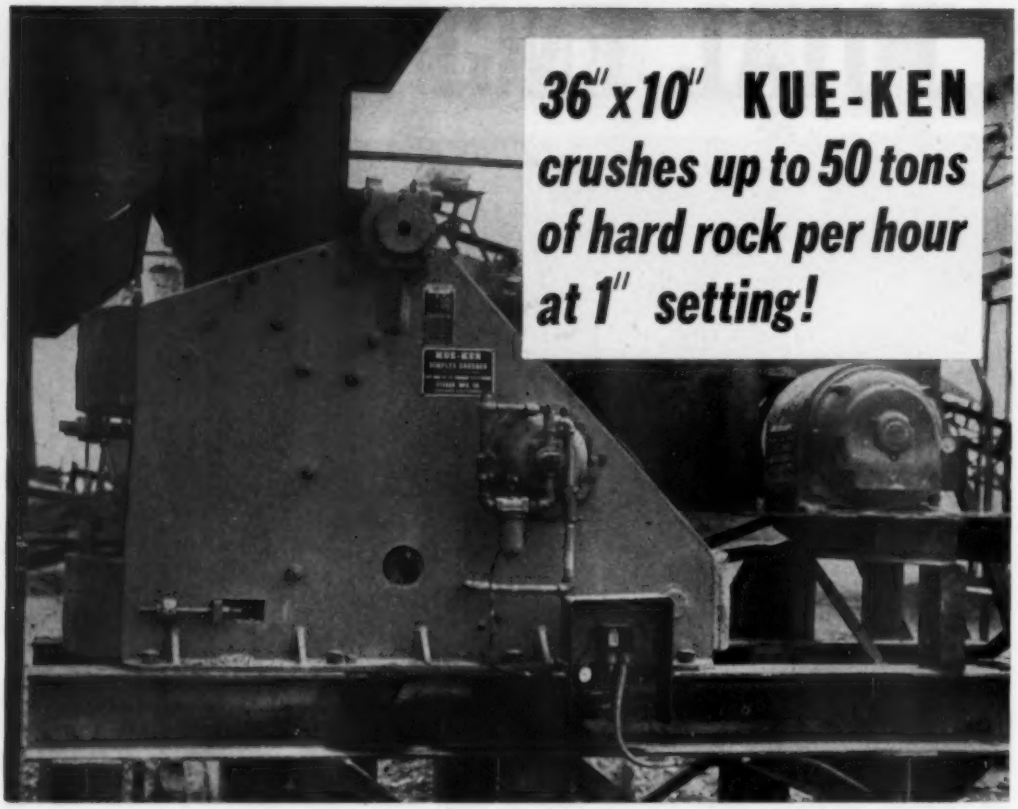
LINK-BELT

BELT CONVEYOR EQUIPMENT

13,280-A

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales offices in Principal Cities.

PIT AND QUARRY, June, 1953, Vol. 45, No. 12. Published monthly by the Pit and Quarry Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under Act of March 3, 1879.



If you're interested in high capacity crushing, it will pay you to investigate KUE-KEN. Delivering 375 crushing strokes per minute, (25 to 50% more than any other crusher), KUE-KEN gives you the highest capacity crushing available today.

You'll be amazed at how much a KUE-KEN reduces maintenance, too. That's because only KUE-KEN permanently seals all mechanism against dirt and dust in a "crankcase type" filtered oil bath, and only KUE-KEN crushes with firm direct strokes that practically eliminate jaw plate abrasion.

See your dealer or write for factual illustrated data.

KUE-KEN pronounced "QUE-KEN"
U. S. and foreign patents pending

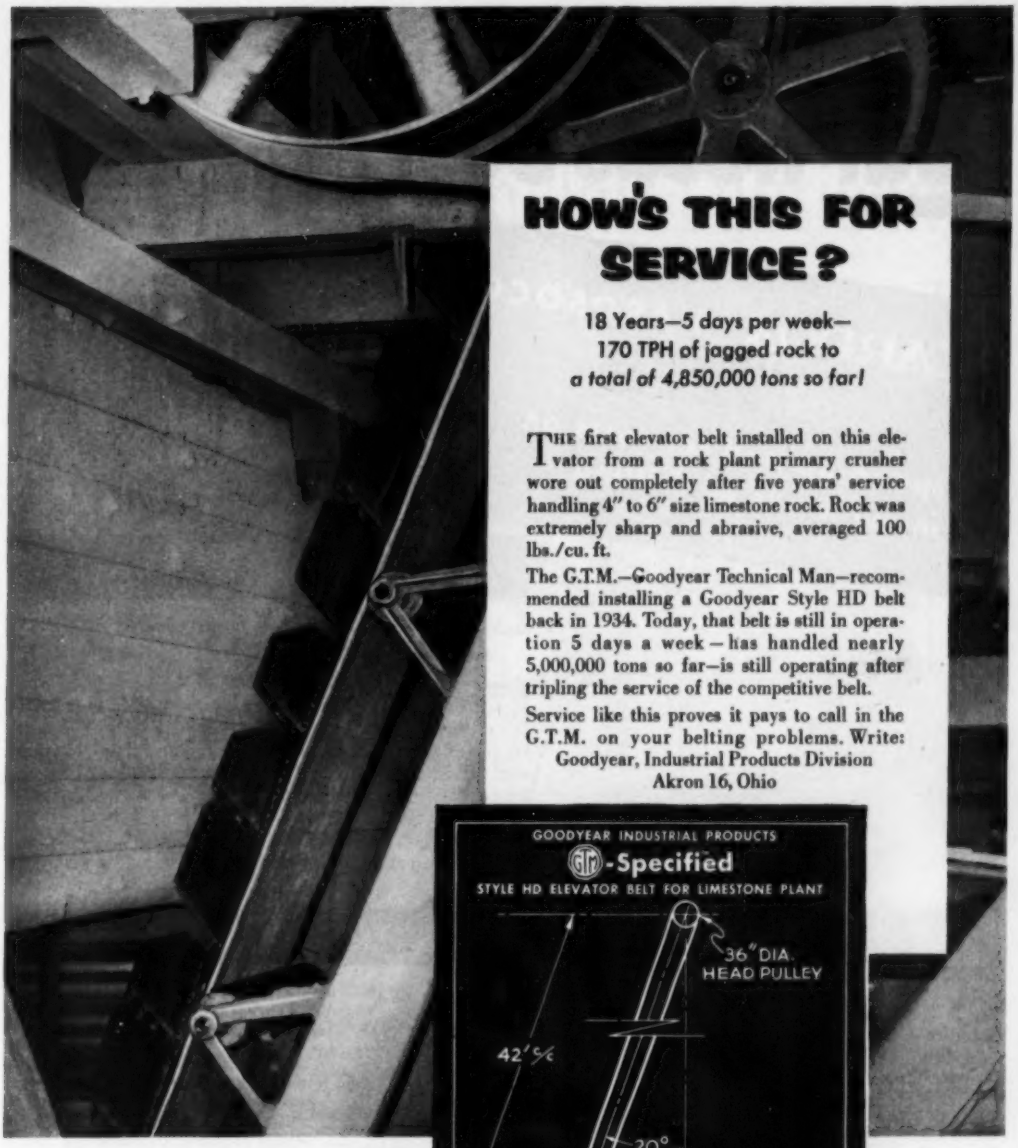
DEALERS: LUND MACHINERY CO., Salt Lake City, Utah; CLOSNER EQUIPMENT CO., San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO., Seattle, Wash.; CONSTRUCTION EQUIPMENT CO., Spokane, Wash.; CAL-ORE MACHINERY CO., Medford, Ore.; MILLER MACHINERY CO., Missoula, Mont.; ANAHUAC MACHINERY CO., Mexico City, Mexico; UNIVERSAL EQUIPMENT CO., Vancouver, B. C.

641 CHESTNUT STREET OAKLAND 20, CALIF.

STRAUB MFG. CO.

Kue-Ken Jaw Crushers	Revolving Screens	Rib Cone Ball Mills
Kue-Ken Gyracone Crushers	Classifiers	Concentrating Tables
Overhead Eccentric Crushers	Feeders	Vibrating Screens

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor, Broad and Arch Streets, Philadelphia, Pennsylvania.
Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.



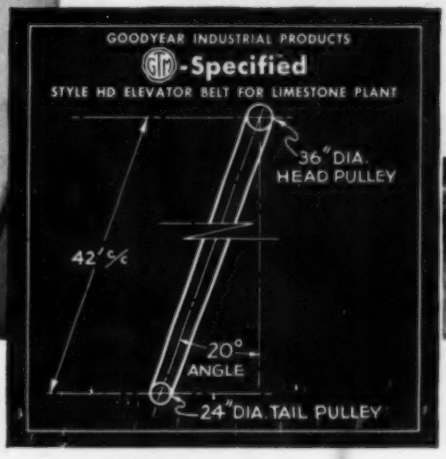
HOW'S THIS FOR SERVICE?

18 Years—5 days per week—
170 TPH of jagged rock to
a total of 4,850,000 tons so far!

THE first elevator belt installed on this elevator from a rock plant primary crusher wore out completely after five years' service handling 4" to 6" size limestone rock. Rock was extremely sharp and abrasive, averaged 100 lbs./cu. ft.

The G.T.M.—Goodyear Technical Man—recommended installing a Goodyear Style HD belt back in 1934. Today, that belt is still in operation 5 days a week—has handled nearly 5,000,000 tons so far—is still operating after tripling the service of the competitive belt.

Service like this proves it pays to call in the G.T.M. on your belting problems. Write:
Goodyear, Industrial Products Division
Akron 16, Ohio



YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing, Tank Lining, Rubber-Covered Rolls: Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

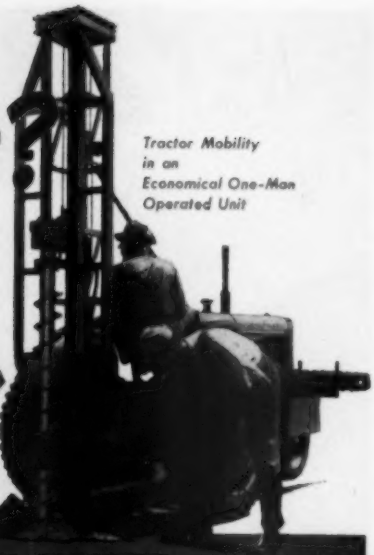
GOODYEAR

THE GREATEST NAME IN RUBBER

Which Meets Your Needs Best

CARDOX - HARDSOCG

speed up and cut costs on many kinds of drilling

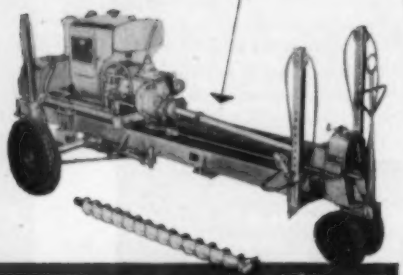


Tractor Mobility in an Economical One-Man Operated Unit

TRACTOR MOUNTED VERTICAL

Multi-Use Unit Saves You Time on the Job —and Between Jobs

Especially designed for jobs that require maximum mobility and fast drilling of many holes. The carefully engineered, rugged drill unit is driven by the standard farm type tractor. The auger is raised, lowered and fed into the work by a built-in hydraulic cylinder. Handles augers up to 6 inches or more in diameter. Augers are in 6-foot sections, available with any standard connection, for extension to any desired length. Augers can be added in just a few seconds



Self-Propelled HORIZONTAL HYDRAULIC

You'll drill more holes per day with this highly mobile unit, because you spend *more* time drilling, *less* time moving from hole to hole. Saves money, too,—you don't have to tie up a truck to move it. Has 32-H.P. air-cooled gasoline engine with power take-off and hydraulic pump. Augers are driven into the bank by a hydraulic piston. Standard auger equipment includes seven 6' sections (42' total) for drilling holes up to 6" diameter. Wheels and axles can be easily removed to permit low level drilling.

STANDARD VERTICAL

Ideal for drilling blast holes or doing exploratory work in clay, gypsum, asbestos, shale, and other materials.

Simple, rugged and very easy to use. The weight of the engine forces the auger and cutter head into the material being drilled. Large hand wheel raises and lowers the power assembly easily. Mast can be lowered when moving unit. Available with 6½ H.P. or 12 H.P. air-cooled gasoline engine. Standard auger equipment includes 6-foot section for 2½" or 3" holes. Other sizes also available.

LET YOUR CARDOX DISTRIBUTOR OR REPRESENTATIVE HELP YOU WHENEVER YOU NEED ANY KIND OF DRILLING EQUIPMENT

CARDOX CORPORATION ... BUILDING • CHICAGO 1, ILLINOIS

"We're through experimenting! ...Sinclair Lubricants suit us to a T"

...says Al DeFeo, Sette Engineering Co., Paramus, N. J.

Mr. DeFeo's job as Treasurer and Purchasing Agent is to see that maintenance costs on the company's heavy excavation and road building equipment are kept at their lowest figure. He reports: – "Our books give us an exact picture of how our equipment is holding up . . . About 10 years ago we experimented with different brands of lubricants, looking for one that would suit our equipment requirements to a 'T'. After trying Sinclair lubricants, *our figures proved* we finally had the right products. With Sinclair TENOL® and Sinclair LITHOLINE® Multi Purpose Grease we cut maintenance costs to a new low. Experimenting proved one thing to us – Sinclair is tops."

To cut *your* maintenance costs, try Sinclair Lubricants. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

For your tough jobs

SINCLAIR LUBRICANTS

THESE REPOINTERS ARE

wear-conditioned

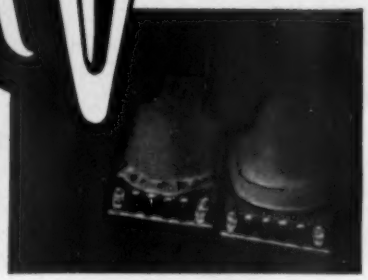
Because they are AMSCO "Wear-Sharp"* Repointers that stay sharper with use...

Service life plus! The combination of Amsco Manganese Steel and the hardness of AMSCOATING with Amsco Hardfacing electrodes—gives you a tooth that wears evenly and stays sharp longer.

Note that only certain grooves (shown in red at left) are Amscoated—the grooves on the outside and the one on each end. This is the area where ordinary teeth wear fastest. The hardened corners on the "Wear-Sharp" equalize wear along the entire cutting edge and eliminate rounded, blunted corners that cut digging speed and waste power.

Field reports indicate that "Wear-Sharp" repointers will give as high as six times the life of other teeth.

In these photographs at right of a typical case history, old repointers lasted from three to four days. Amsco "Wear-Sharp" repointers lasted 32 days—eight times the service life of the repointers previously used.



"Wear-Sharp" repointers installed on two dipper teeth showing condition of old teeth.

Dipper teeth after 257 hours of use with "Wear-Sharp" repointers used. New "Wear-Sharps" are ready for installation.

Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que. Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

Her fingertips imagine the taste

The lady doesn't trust her eyes alone.

The buyer of Multiwalls is in much the same position.

Aside from package design, it's hard to tell one manufacturer's bag from another's simply by looking at it or fingering it.

Put the bags out of sight and you may be able to see many differences.

Men who buy 85 per cent of all Multiwalls consider* these intangibles more important than any other factor when they choose their supplier.

Invariably, these are among the first questions they ask . . .

"Is this company big enough?"

"Do they have a fair allocation policy?"

"Are their prices competitive?"

"Do they respect delivery dates?"

In a nutshell—

"Are they good people to do business with?"

We can't tell you what the answers are when these Multiwall users consider Union. This we do know . . . and the inference is yours to make—

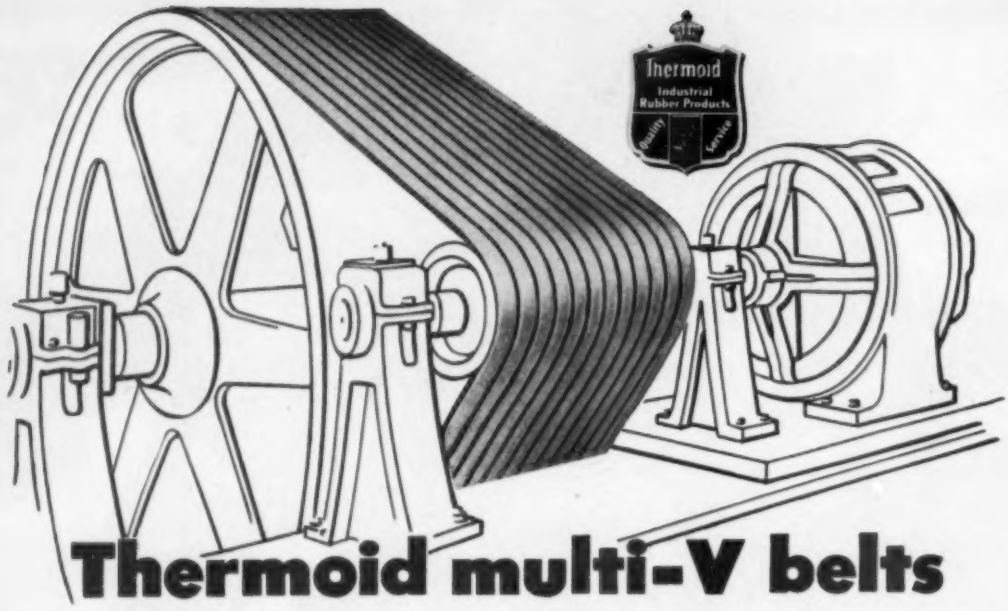
In these days of industrial pressure, when *dependability* is a fervent wish as well as a word, men to whom Multiwalls are important are placing an increasing share of their orders with Union.

More so every day . . .

IT'S UNION FOR MULTIWALLS

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING



Thermoid multi-V belts

pre-stretched for non-slip performance

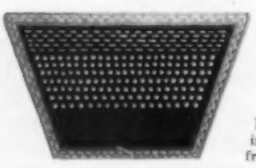
When you use Thermoid *Pre-stretched* Multi-V Belts, you can be sure of maximum power transmission, economical non-slip performance and extra long belt life.

Thermoid Multi-V Belts withstand moisture, abrasion and repeated shock loads.

They're built to take it—specially designed to resist internal friction and heat.

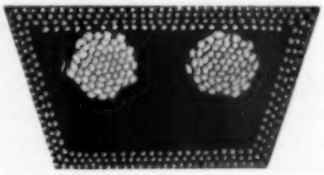
Your Thermoid Distributor can help you with power transmission problems, whether you use Multi-V, F.H.P. or Flat Transmission Belts.

It pays to specify Thermoid.



Thermoid D and E Sections
Grommet type construction assures lower permanent stretch, greater flexing ability and shock absorption.

Thermoid A, B and C Sections
Plied cord construction, latex impregnated to reduce internal friction and heat build up.



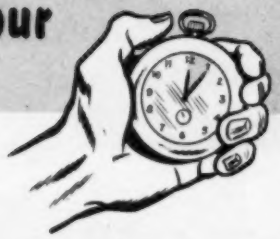
Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

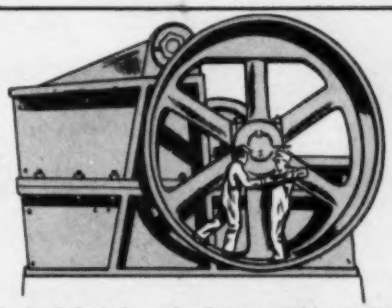
Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

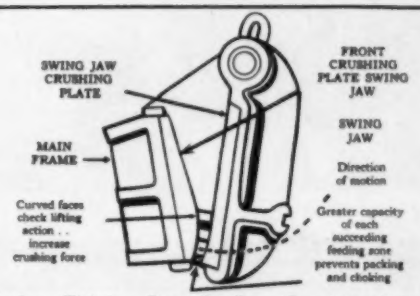
Crushes 1,000 Tons Per Hour





The Basalt Rock Co. of San Francisco, Calif., installed this 48" x 60" Traylor Jaw Crusher in 1945. Since then it has regularly crushed 1000 tons of Franciscan Sandstone per hour. On occasion, it has produced up to 1180 tons per hour.

Reduces Maintenance Costs: According to company spokesmen, the Traylor HB has not required any major maintenance at all since installation over seven years ago.


SWING JAW CRUSHING PLATE
MAIN FRAME
Curved faces check lifting action . . . increase crushing force
FRONT CRUSHING PLATE SWING JAW
SWING JAW
Direction of motion
Greater capacity of each succeeding feeding zone prevents packing and choking

Produces With Less Power Per Ton: Curved Jaw Plates reduce choking and packing to keep horsepower per ton requirements low. This also reduces unnecessary wear . . . enables Traylor Curved Jaw Plates to outlast ordinary straight plate 3 to 1.

YOU DON'T GET production like this without reason: To see how a Traylor Crusher stands up under hard usage year after year, send for detailed illustrations and descriptions of Traylor construction. You'll find Traylor Type HB Jaw Crushers feature exclusive designs that boost production with a minimum of waste fines. Send coupon today.

SHOW ME how a Traylor Type HB Jaw Crusher will boost production . . . at less cost . . . for me. Send Bulletin 4105.

Name: _____

Position: _____

Company: _____

Address: _____ *State:* _____

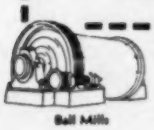
TRAYLOR ENGINEERING & MANUFACTURING CO.
596 MILL ST., ALLENTOWN, PA.

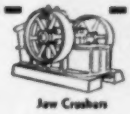
SALES OFFICES: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

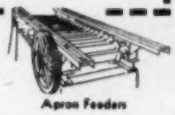
Primary Gyratory Crushers

Rotary Kilns

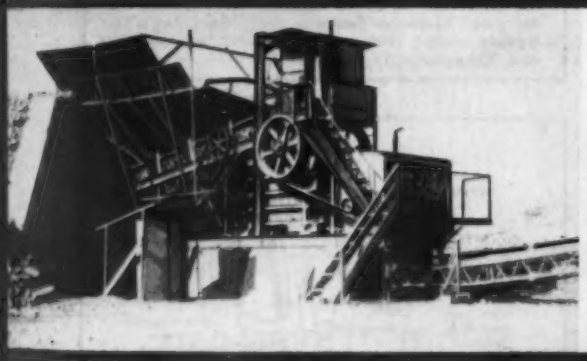
Secondary Gyratory Crushers

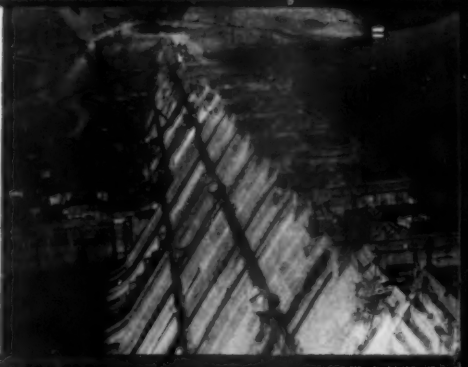

Ball Mills

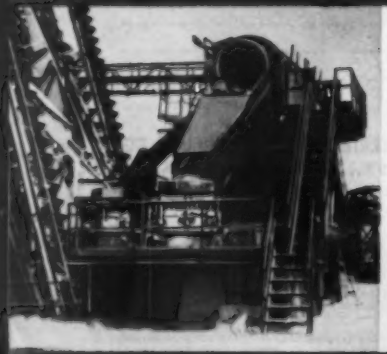

Jaw Crushers


Apron Feeders

TELSMITH







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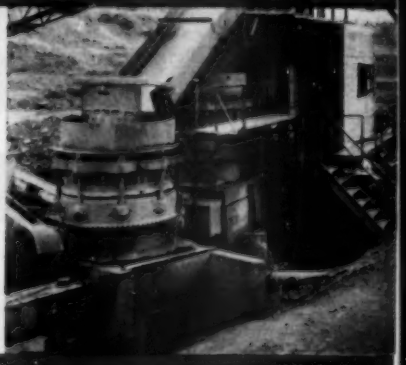
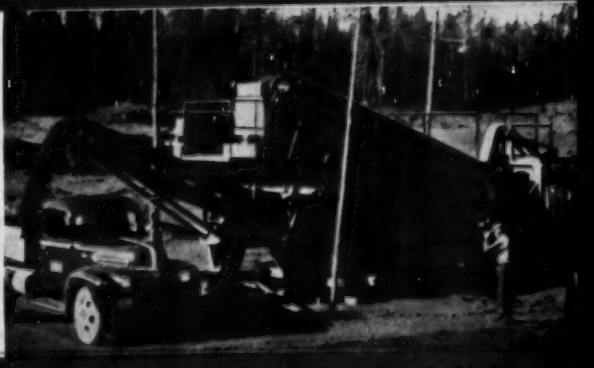
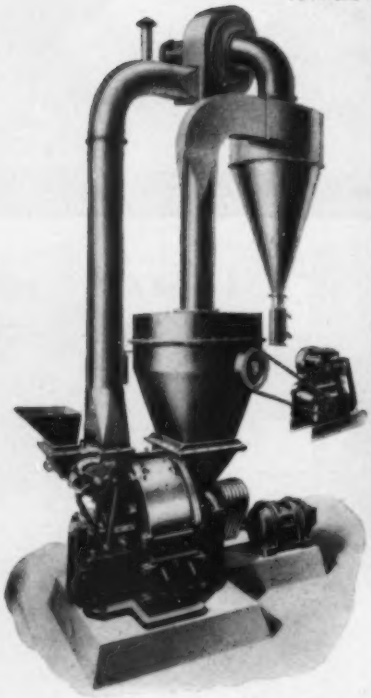
Relieve yourself of all technical details—use Telsmith Engineering Service and Equipment for profitable plants.

SMITH ENGINEERING WORKS
MILWAUKEE 12, WISCONSIN
Agents in All Principal Cities



Everywhere





KAOLIN FILLERS CERAMIC CLAYS COATINGS

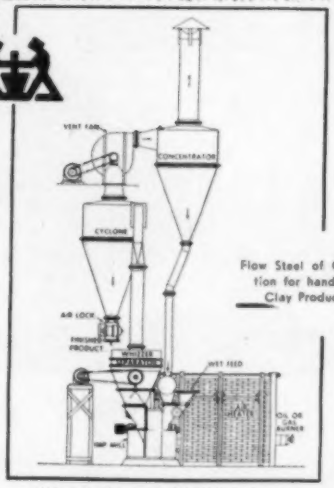
Grinding High-Moisture CLAYS with the Flash-Drying-Equipped IMP MILL

BALL AND SAGGER CLAYS MOULDING CLAYS FILTER CLAYS

THE problem of removing moisture while pulverizing various types of wet clay is economically answered by the Raymond IMP MILL, equipped with Flash Drying accessories. This compact mill system combines the entire operation of drying, grinding and classifying in a single unit of equipment.

In a typical installation, the crude clay containing approximately 25% moisture is fed directly to the mill after going through a cutter to break it down to satisfactory feed size. The mill system then produces a dry uniform finished product testing 99% passing 325 mesh with a final moisture of 3% or less.

This is a clean, automatic operation requiring a minimum of floor space, as there are no separate dryers or conveyors necessary. Product quality is easily controlled in fineness and dryness. One simple adjustment of the Whizzer Separator provides instant regulation over a wide range of fineness, while automatic temperature controls maintain a constant final moisture.



Flow Steel of Operation for handling Clay Products

Write for Raymond IMP MILL Catalog No. 67, which describes applications of Flash Drying and Fine Grinding.

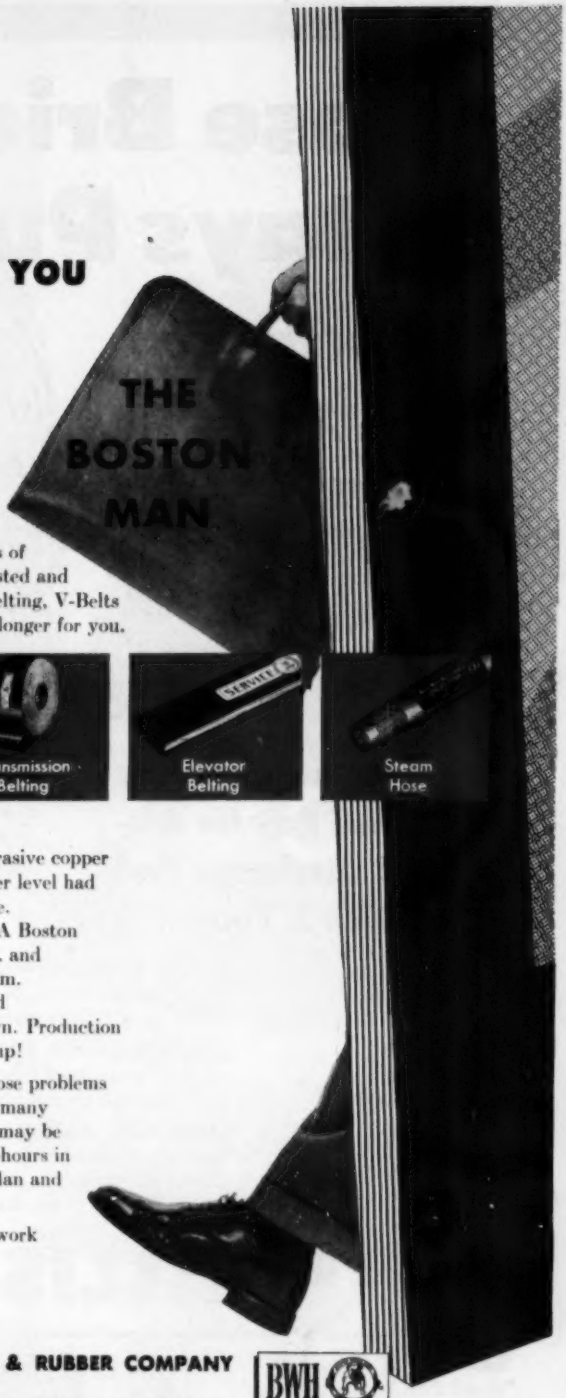
COMBUSTION ENGINEERING, INC.

Raymond PULVERIZER DIVISION

1321 NORTH BRANCH ST., CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

THERE'S A BONUS FOR YOU IN THIS BRIEFCASE!



Bigger profit margins are made by cutting production costs without risking production efficiency.

In his briefcase, the Boston Distributor Representative carries complete descriptions of production cost-cuts that have been field-tested and proven in your industry . . . Boston Flat Belting, V-Belts and Steam Hose that will work harder and longer for you.

V-Belts & Sheave

Conveyor Belting

Transmission Belting

Elevator Belting

Steam Hose

In a large copper mine, heavy loads of abrasive copper ore transported over long distances to smelter level had been taking a heavy toll of conveyor belt life. Replacements were frequent and expensive. A Boston production expert surveyed the situation . . . and recommended a Boston Conveyor Belt System. Since last September, these belts have hauled thousands of tons of ore without a breakdown. Production costs have gone down . . . profits have gone up!

The Boston Man knows the belting and hose problems in your industry. He has solved problems in many instances almost identical with the one that may be troubling you. He can save you wasted man-hours in delays . . . money in replacements. Let him plan and estimate your belting and hose requirements.

He is coming to see you soon. Put him to work for you . . . free.

BOSTON WOVEN HOSE & RUBBER COMPANY

MAIN PLANT: CAMBRIDGE, MASS. P. O. BOX 1071, BOSTON, MASS.

BWH

SINCE 1880

Distributors of a Complete Line of Mechanical Rubber Products in All Principal Cities

Nose Brick "Stays Put"

in Rotary Kilns Equipped With

ALLIS-CHALMERS
Air-Cooled
KILN END

Savings in Refractory Brick Will Pay for Air-Cooled Discharge End in 2 to 3 Years!

No end warpage on rotary kilns equipped with this air-cooled discharge end. Hot end stays cool, round and rigid. No shut-downs to replace end brick. In addition to refractory savings, you'll get . . .

MAINTENANCE SAVINGS . . . No loss of valuable production time to replace end brick! Savings in brick, labor and down-time will pay for air-cooled end *several times over* during life of kiln.

AND FUEL SAVINGS . . . Because the discharge end will not distort, the air seal between the firing hood and the kiln continues to be effective after years of service. Fuel savings result when the temperature of the air inside the kiln is not decreased by infiltering cold air.

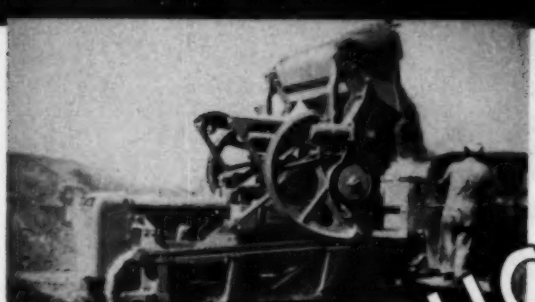
A-3934

Air-Cooled kiln end can be installed on kilns now in service. Get more facts from the A-C representative in your area, or send for Bulletin 07B6368A. Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Hammermills | Vibrating Screens | Jaw Crushers | Gyratory Crushers | Grinding Mills | Kilns, Coolers, Dryers



Loading sand on construction job.

PRODUCTION UP COSTS DOWN

Loading rock in Eastern quarry.

Tough loading jobs that incorporate loading of sand, rock, frozen ground, narrow passage ways, long hauls to discharge or any combination of disagreeable and hard to manage operations are easy for an Eimco.

These heavy-duty machines are at home in a rock pile — they'll load big or small trucks and operate in a space where no tractor can turn around.

Write for information on Eimcos, how they can load for you at unusually low cost and at a rate of 250 to 350 tons per hour.

You Can't beat an Eimco

EIMCO

A456

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES: SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK: 51-52 SOUTH STREET. • CHICAGO: 3319 SOUTH WALLACE STREET.
BIRMINGHAM, ALA.: 3140 FAYETTE AVE. • DULUTH, MINN.: 216 E. SUPERIOR ST.
EL PASO, TEXAS: MILLS BUILDING. • BERKELEY, CALIF.: 637 CEDAR STREET.
KELLOGG, IDAHO: 307 DIVISION ST. • LONDON W. 1, ENGLAND: 190 PICCADILLY.

IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEED, 12, ENGLAND
IN ITALY: EIMCO ITALIA, S.P.A., MILAN, ITALY

Construction job in frozen ground.

THE *ONLY* MODERN FRONT END .. ON QUARRY SHOVELS

110-B, 4½ cu. yd.
150-B, 6 cu. yd.
190-B, 8 cu. yd.

Convertible Shovels — Draglines

THE new Bucyrus-Erie Ward Leonard electric shovels bring to quarry loading the first important departure from the old-fashioned shovel front end. This advanced design — with two-section boom, inside tubular handle, and quiet positive rope crowd — increases speed and payload. It reduces upper boom weight, puts extra strength in the lower section where maximum strength is needed. It cuts out old-style handle racking and crowd pinions, takes the deadweight of crowd machinery off the boom. And, most important to *you*, it gives you all these field-proven performance advantages:

- **Lighter Weight, Greater Strength** — Two-section boom, with light upper section . . . lower section strut-connected to the A-frame.
- **No Handle Twist** — Inside tubular dipper handle is free to rotate in rubber-cushioned saddle block.
- **No Handle Binding in Saddle Block** — Rope crowd is quiet, positive, eliminates handle racking and crowd pinions.
- **No Dipper Wobble** — Twin dual hoist ropes put hoist power where needed for steady travel of dipper through bank.
- **No Sway Braces** — Widespread boom feet eliminate accessory boom braces or cables.
- **Low Swing Loads** — Advanced front end design, with crowd machinery on deck, cuts dead load on swing, steps up swing speed.
- **High Pay Loads** — Single tubular handle — with improved dipper back connections, dipper trip on saddle block, no dipper bail — reduces dead load on hoist, leaves more power for digging. 31153C

There's much more to the story, too. Deck machinery, electrical equipment, and mounting all match the front end in advanced engineering and outstanding performance advantages. The full story will convince you that yard for yard, dollar for dollar, pound for pound, these are the finest rock excavators ever built.

Write for Complete Information Today!

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE, WISCONSIN

these TSP parts mean money in your pocket...

...because they last many years longer than any product purchased for the same service! Elimination of downtime, replacement parts, etc., gives you the tremendous dollar savings now enjoyed by hundreds of Companies in the Cement Industry.

Here's why: "Tool Steel Process" parts are made of low carbon alloy steel. File hard wearing surfaces are backed by a tough ductile core, resulting in super resistance to wear and fatigue.

Specify "Tool Steel Process" parts today!

You receive an absolutely positive written GUARANTEE that TSP products will give a longer life in the same service than any other product.

FREE!

Bulletin No. 452
TSP Products for the
Cement Industry

THE TOOL STEEL GEAR AND PINION CO.
CINCINNATI 16, OHIO, U. S. A.

Ad No. 1002

STOP WASTING MONEY BY THE TRUCKLOAD

Go White!

YOU NEED the most efficient kind of trucks for today's schedules . . . today's operating costs . . . today's work conditions.

That's why you see so many Whites these days in excavating service and dump operations.

Tailored to the exact needs of your work, Whites have the power and the rugged reliability to get more work done . . . in less time . . . at lower cost.

Find out how Whites save money in *your* kind of business.

THE WHITE MOTOR COMPANY • *Cleveland 1, Ohio*

For more than 50 years the greatest name in trucks

White

Check these White advantages . . .

- √ WIDE RANGE of models to meet every excavating operation—4 and 6-wheel trucks and tractors for end or side dump.
- √ SINGLE drive axle units with single or double reduction or two-speed axles.
- √ TANDEM drive units with double reduction axles.
- √ WHEELBASES as required. Heavy duty springs, front shock absorbers, rock-lug tires and other special units available as required.
- √ ENGINES—gasoline or diesel-powered.
- √ TRANSMISSIONS—various transmissions and auxiliary transmissions to meet local operating conditions.

MODERN P & H ELECTRIC SHOVEL with electro-magnetic type clutch and P & H stepless power regulation—Harnischfeger Corporation, 4400 W. National Avenue, Milwaukee, Wisconsin.

Mr. Strip Miner:

"WHAT'S A GOOD SHOVEL WORTH?"

In today's market, the cost of a large, modern electric stripping shovel runs somewhere in the neighborhood of a quarter of a million dollars! A tidy sum indeed!

But aside from the initial dollars invested, your strip shovel is the key to your operation . . . the hub around which your operation revolves. When it's out of action, it leaves a tremendous hole in your production parade . . . a gaping hole that's immediately reflected in dollar profits.

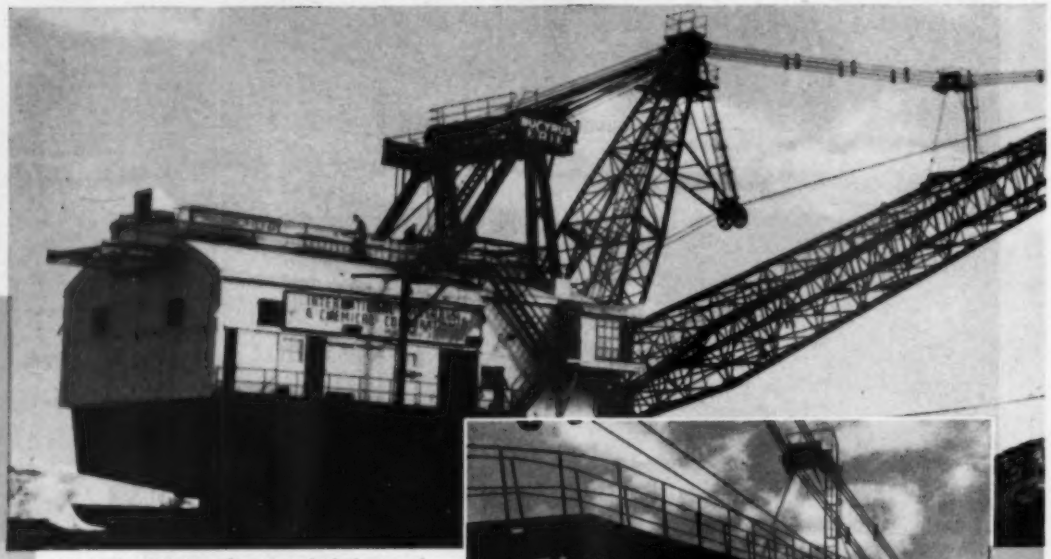
We're sure you'll agree that your strip shovel is certainly worth every effort and expense necessary to see that its many vital moving parts are efficiently and expertly lubricated.

THAT'S WHERE THE COMPLETE LINE OF CITIES SERVICE LUBRICANTS CAN SERVE YOU. Cities Service offers one-source lubricant buying for you. There is a Cities Service Lubricant for every lubricating point on your shovels . . . electric motors, bearings, gears, cables. Actually, the complete Cities Service Line can cover all your needs in all mining operations . . . from the lubrication of locomotives, mine cars, tractors and motor trucks, right down to tempering and quenching oils that may be required in your equipment repair shop.

Why not try the Cities Service one-source plan? You'll find it saves time in buying, cuts equipment down-time, and adds dollars to your profit column. Call your nearest Cities Service office or write Cities Service Oil Company, Dept. F15, Sixty Wall Tower, New York City 5, New York.

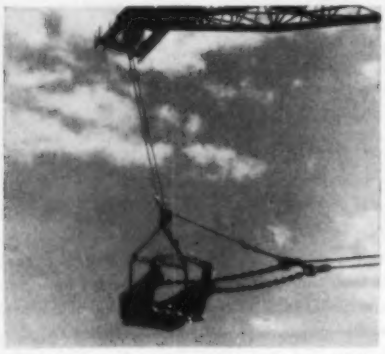
CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

The Bigger Digger moves



THE BIGGER DIGGER makes a round trip once a minute . . . moves 21.5 cu. yds. each trip. Huge loads like that put a terrific stress on boom suspension cables, but Tiger Brand Boom Support Strand has the needed strength.

THE DRAG LINES on the Bigger Digger must withstand a lot of wear and heavy pulls. Special Tiger Brand Drag Lines meet these requirements and give long service.



THE HOISTING ROPES are Tiger Brand too. They have the fatigue resistance needed for constant flexing over sheaves and drums.

Send for helpful guide book ▶

American Steel & Wire
Room H-63, Rockefeller Building
Cleveland 13, Ohio

Please send me, without obligation, a copy of your "Wire Rope Recommendation Book."

Name.....

Company.....

Address.....

City & State.....

1,000,000 cu. yds. a month

-with Tiger Brand Wire Ropes

● This huge dragline scoops out overburden and phosphate matrix at the rate of 21.5 cu. yds. per minute. It's the Bigger Digger at International Minerals & Chemical Co.'s phosphate mine near Mulberry, Florida. Drag lines, hoist ropes, and boom suspension cables on the Bigger Digger take a lot of hard wear—and they have to be strong. Amercian Tiger Brand Wire Ropes provide the right combination of strength, wear resistance, and flexibility for these tough jobs.

The duty on the boom suspension cables is especially exacting. The Bigger Digger has the longest boom on record—215 ft. long—and the suspension cables, besides great tensile strength, must possess strictly uniform physical properties. Tiger Brand Boom Support Strand just fits these tough requirements.

You can choose from these and hundreds of other types and sizes of Tiger Brand Ropes—there's one that has been specially designed to suit every wire rope job you have. Our "Wire Rope Recommendation Book" is an excellent guide to the proper selection of ropes. It's packed with helpful application information and lists the best ropes to use for typical rope jobs. Just send the coupon for a free copy.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

WHY NOT LOAD THE CHEAPEST WAY?

BARBER-GREENE

MODEL

82-A

CRAWLER-MOUNTED BUCKET LOADER

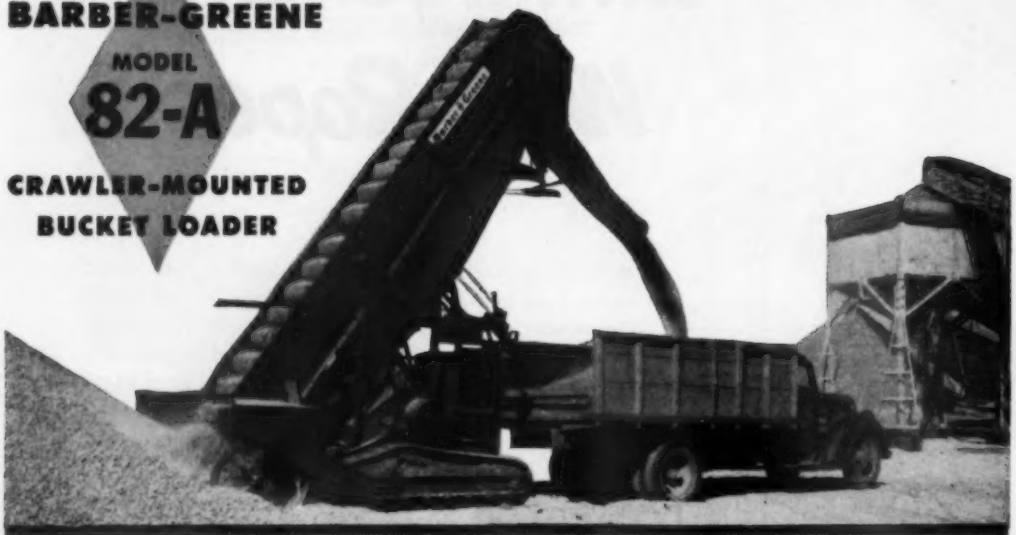


FIGURE CONSIDER COMPARE AND SEE

your present loading cost . . .

wasted truck time . . . wasted man-hours . . . special operator . . .

the constant 3 cu. yd. per min. loading of the B-G 82-A . . .

the savings in man-hours and money possible on your loading jobs with a B-G 82-A Bucket Loader.

A B-G 82-A Bucket Loader is by all odds the cheapest and fastest method of loading free-flowing materials into trucks. Exhaustive cost analyses made throughout Barber-Greene's over 30 years' experience (during which B-G Loaders handled over a billion yards of material) have consistently proved this.

Simple controls mean that each driver can load his own truck . . . no need for an expensive operator. Each truck can be loaded to full capacity without spillage . . . without truck damage or undue truck wear.

Crawler-mounted, the 82-A provides positive traction in all kinds of going—on soft or muddy bases—on spots where pneumatic-tired rigs can't operate.

Barber-Greene BG

Aurora, Illinois, U. S. A.

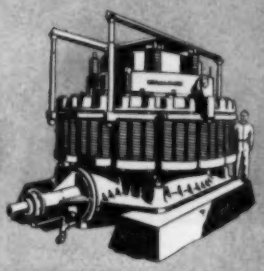
Statue of "The Grinder", represents a Scythian slave whetting a knife on an irregular shaped, natural sharpening stone.

ABRASIVES *have been the* "Silent Partners" *of World Progress*

Since ancient man's first need for tools and weapons, abrasives have been a decisive factor in shaping the progress of civilization. As man's manufacturing abilities increased, natural abrasives were no longer sufficient . . . which led to the use of the first manufactured grinding wheel. Today, practically every man-made product depends upon abrasives.

Of utmost importance in processing, prior to the manufacture of the finished abrasive product, is the method of reducing the hard component materials into workable sizes as quickly and efficiently as possible. *Here, as in all other fields where fast, low cost reduction is paramount for profitable production, SYMONS* Cone Crushers are widely used by the leading producers of abrasive products . . . to produce a constant, uniform size of material.*

NORDBERG MFG. CO., Milwaukee, Wisconsin C-253



SYMONS* Cone Crushers . . . the machines that revolutionized crushing practice . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter — in capacities from 6 to 900 tons per hour.

*SYMONS . . . A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD.

NORDBERG

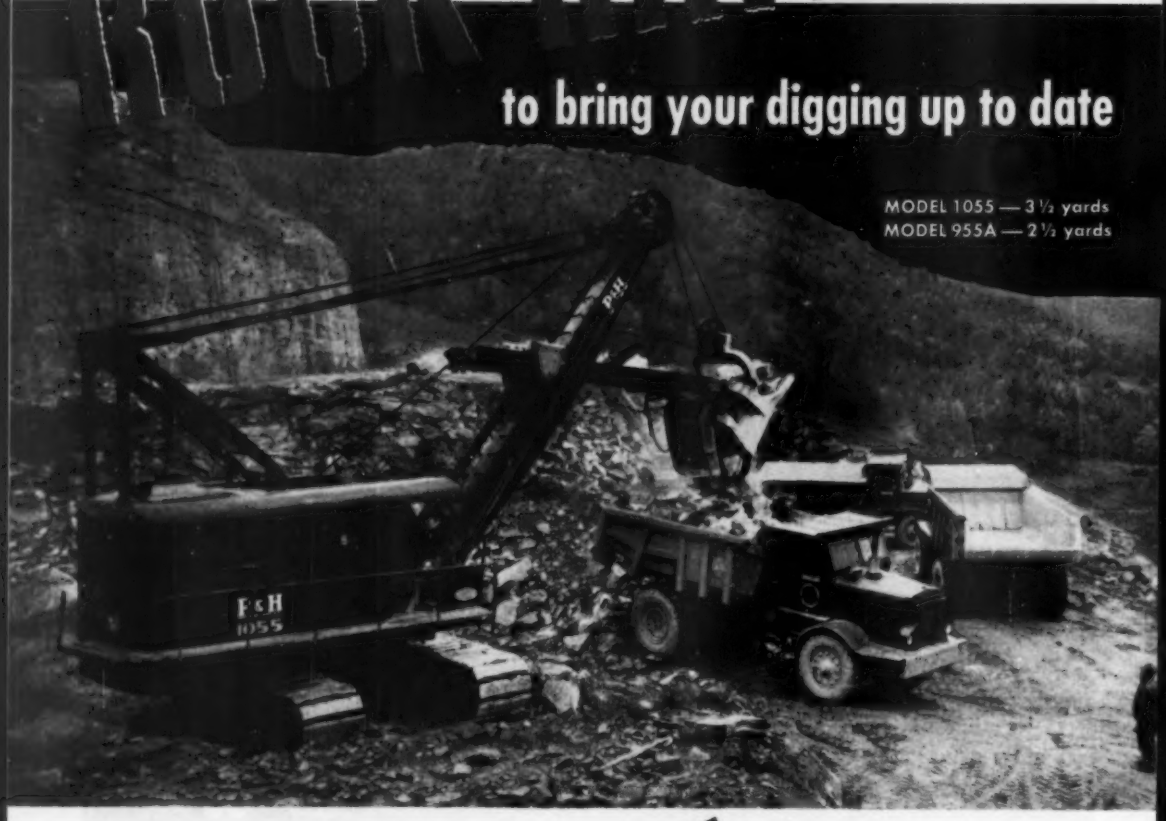
MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • DULUTH • WASHINGTON • TORONTO
MEXICO, D.F. • LONDON • PARIS • JOHANNESBURG

ROCK RATED

to bring your digging up to date

MODEL 1055 — 3½ yards
MODEL 955A — 2½ yards



You have the jump on costs when your new P&H takes over the tough digging jobs. Why? Because there's no other machine to match its performance. You have the speed — a 15% to 25% faster digging cycle — for bigger production. You have the all-welded strength to take shock loads that would K.O. less rugged machines. You have the stability to exert more power at the tooth point. That gives you added capacity.

If you're ready to cut your costs, these P&H's are ready to help you.

P&H MAGNETORQUE*
ELECTRIC SWING

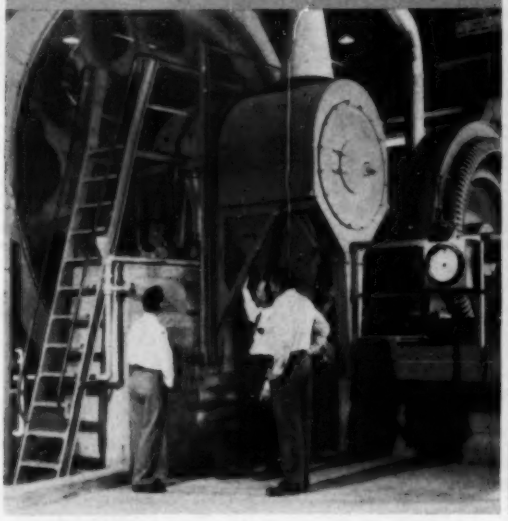
the greatest shovel improvement in 20 years. It's smoother, faster, more dependable. It eliminates the old swing frictions with their constant headaches and replacement costs. Magnetorque lasts the life of your machine. You should know the facts about it!

**T.M. of Harnischfeger Corporation for electro-magnetic type coupling.*

P&H LARGE EXCAVATOR DIVISION
HARNISCHFEGER CORPORATION
MILWAUKEE 46, WISCONSIN

the P&H Line

Left, A. W. Elrod, Gulf Sales Engineer; Elroy King, Vice-President, Halliburton Portland Cement Co.; and A. Anderson, Superintendent of Halliburton Plant discuss the lubrication of this Allis-Chalmers Ball Mill, which gives the cement a final grind before it is sacked.



The gear drive at the right rotates the kiln and is lubricated with Gulf E.P. Lubricant. The electric motor in the foreground uses Gulf Precision Grease, and the auxiliary gasoline engine uses Gulfpride Oil.

Gulf Quality Lubricants

keep equipment operating smoothly at Halliburton Portland Cement Co.

The use of quality petroleum products pays big dividends in the form of more dependable equipment performance. and lower maintenance costs.

That's why many progressive leaders in the industry, like the Halliburton Portland Cement Co. of Corpus Christi, Texas, use Gulf lubricants and fuels. They have found that Gulf Products are of uniform high quality and that this is reflected in cost and production records.

Then too, they get another benefit—the practical assistance of Gulf Sales Engineers, who help solve lubrication and combustion problems. Gulf products and service are available to you through more than 1400 warehouses in 31 states from Maine to New Mexico.

GULF OIL CORPORATION · GULF REFINING COMPANY
PITTSBURGH 30, PENNSYLVANIA

GULF SERVES INDUSTRY

There's more to tractors than meets the eye . . .

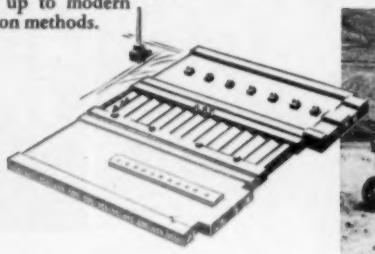
The real "pay-off" value of any tractor to its owner is how it measures up to the standards set by today's modern production methods.

To meet these needs, Allis-Chalmers started from scratch and built *a line of tractors with a future*. Thousands now have been tested and proved on the toughest proving ground of them all, actual jobs, and they have more than measured up to expectations. Owners have found that these tractors set new standards of performance . . . that they give greater output with less down time . . . plus more profit, whether pulling, pushing, digging or dozing. Operators have discovered new ease and comfort in operation, too; and mechanics say these are the easiest-to-service tractors that they have ever worked on.

Yes, the "family circle" of users of Allis-Chalmers tractors is growing constantly. Many users who bought their first Allis-Chalmers tractor only a few years ago now have fleets of them, and many others who operate only one or two tractors have become Allis-Chalmers boosters.

This acceptance is the springboard behind a big plant expansion at Springfield, Illinois, which will enable Allis-Chalmers to meet *your* future needs. See your nearby Allis-Chalmers dealer now for the inside facts on pace-setting tractors that measure up to modern production methods.

This 72-drawbar hp., 18,800-lb. HD-9 is making friends in every field because its power and weight make it an ideal size for dozens of today's modern jobs. In addition, operators can gain up to 25 percent more production on short dozing jobs because they can go from any forward speed to any reverse speed with just one shift.



For stripping overburden, cleaning up around shovels, building access roads . . . wherever big production is essential to the job, this big HD-15 has more than proved its worth. With 109-drawbar hp. and 27,850-lb. weight, it works quickly, efficiently as a dozer, tractor-shovel, puller or pusher.

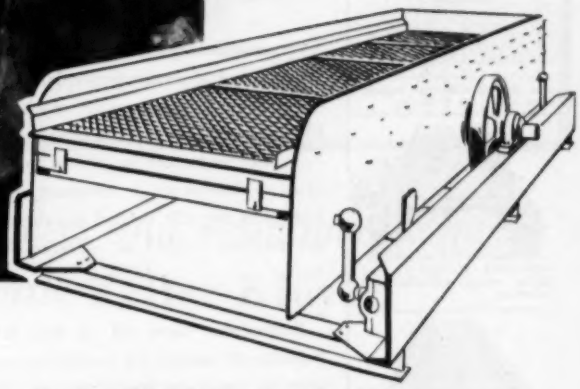
The 40-drawbar hp., 11,250-lb. HD-5 is a versatile jack of all jobs above or below ground. With hydraulically controlled Tracto-Shovel, it's equally useful handling sand and gravel, cleaning up around conveyors and hoppers, loading hauling units, dozens of other jobs.

Here's real tractor teamwork . . . four HD-20's in a "train" — three pulling scrapers, one pushing—all working together for big production. With torque converter drive, they synchronize speeds at contact . . . automatically load at the fastest speed that job conditions permit, with less strain on operators and equipment. With 175 engine hp. and 41,000 lb. weight, the HD-20 is today's new yardstick of crawler tractor performance.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

PROOF



SECO DRY SCREENS SAND

at W. F. Saunders and Son, Syracuse, N. Y.

SAVES 25% BANK RUN SAND NORMALLY WASHED AWAY

Here's sand right from the bank being dry screened with a 4x12′ single deck Seco at the Syracuse, New York plant of W. F. Saunders and Son. And here's the on-the-job story of the success of this operation. First, a better product because, while this Seco screen efficiently removes the clay balls and stones they don't lose the fines usually washed away in a wet screening operation. Second, a more economical operation because no pipes, pumps or special equipment is needed and they eliminate the approximately 25% loss of material usually associated with wet screening. (Think of the savings in trucking from the pit to the screening plant alone.) Third, a trouble-free operation because Seco vibrating screens require so little maintenance as proven on this and thousands of other installations throughout the country. How about your dry screening problems? Sand, Ag-Lime, etc. Why not consult Seco screening specialists right now. Be assured of prompt, interested help. Our whole organization is devoted to one purpose . . . to build the finest vibrating screens for every job requirement. Write, phone, wire!

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

SECO ENGINEERING MAKES THE BIG DIFFERENCE

Patented construction gives Seco Vibrating Screens better, sharper, whip in action . . . keeps all the vibration in the live screen body. Over 300 models tailored to your specific requirements.

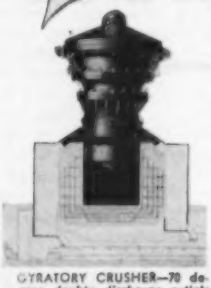
Screen Equipment Co. Inc.
1750 Walden Ave.
Buffalo 25, New York

In Canada
United Steel Corp.
Toronto, Ont.

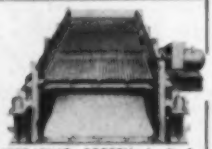
KENNEDY

CRUSHING MACHINERY and EQUIPMENT COMPLETE MINING PLANTS

. . . in use the world over!



GYRATORY CRUSHER—70 degree double discharge outlets solve sticky ore problem.



VIBRATING SCREEN—1, 2, 3 decks; 4-way, variable-speed vibration.

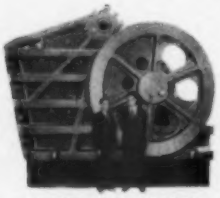
ROCK FEEDER—Up to 20'/minute feeder speed.

ROTARY KILN — Maximum production; gear reduction operation.

KVS machinery and equipment is designed, engineered and built to serve the aggregate and mining industry. Scientific, physical aids that combine utmost utility with rugged stamina . . . the kind of machinery that produces peak capacities with a minimum of maintenance.

An outstanding characteristic of KVS equipment is the fact that all parts are standardized . . . replacement can be made by any qualified machinist . . . spare parts FIT, because they are machined to exacting tolerances . . . ready for instant use. When the rare occasion arises where replacements are necessary, air express deliveries bring you the part needed anywhere in the world and the machine is back in operation within a matter of hours!

Enthusiastic users tell us that KVS machinery is breaking all records for producing maximum rock tonnage at minimum operating cost. Our engineers are available at any time for consultation on *your* crushing and handling problems. Write, cable or phone.

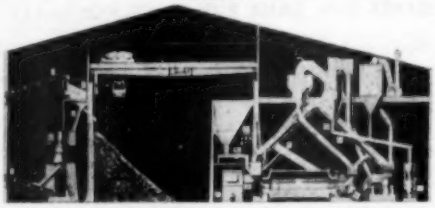


SWING JAW CRUSHER — Heavy duty; reversible swing jaws.

SLUGGER ROLL—Reduction variable from 2" to 10" while operating.

TUBE MILL—Drives KVS mills of any diameter, length.

SEND FOR ILLUSTRATED BULLETINS DESCRIBING ALL KVS PRODUCTS.



AIR SWEPT TUBE MILL—Produces 94% plus through 325 mesh when grinding –2" clinker.

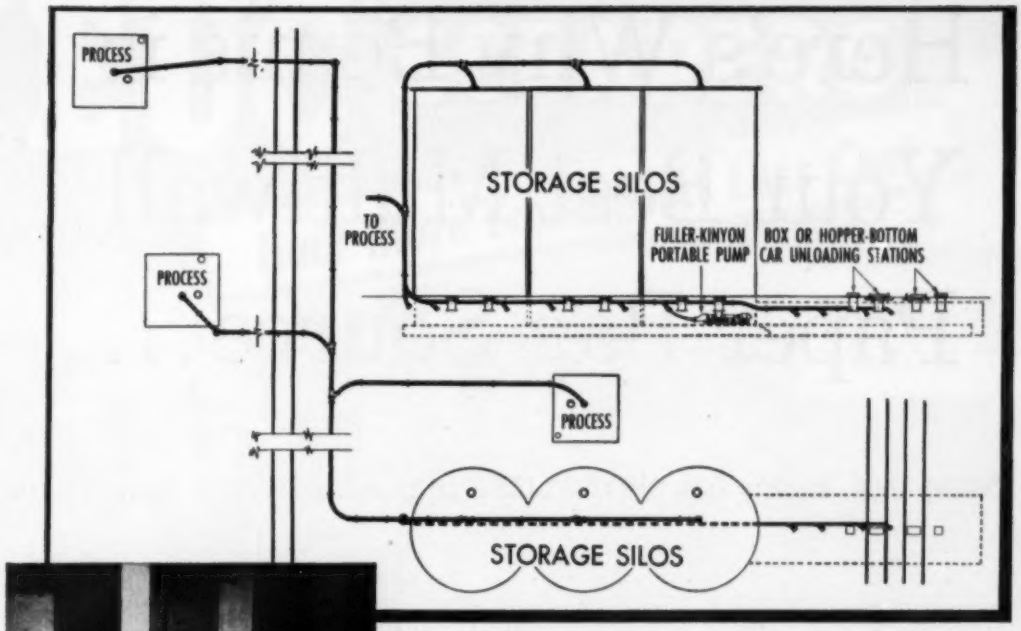
IT COSTS LESS.. TO OWN THE BEST!

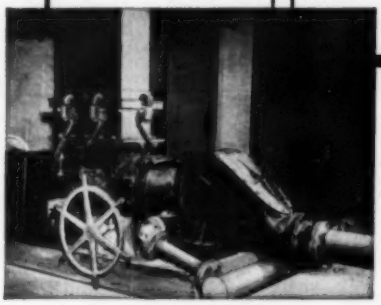
KENNEDY - VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK

FACTORY DANVILLE, PA.





speed and economy assured with Fuller-Kinyon

Deep in the heart of Texas, this Fuller-Kinyon Conveying System is at work handling bulk shipments of pulverized phosphate rock from cars to storage, for a prominent chemical company.

This same portable Fuller-Kinyon Pump, in addition to unloading from box or hopper-bottom cars, on adjacent tracks, and delivering to any one of three storage silos, can be moved on a track to positions underneath these silos. Connection is easily and quickly made to the silo to be emptied and material conveyed to any one of three widely separated process points in the plant. Advance designing makes this dual use of the Fuller-Kinyon Pump feasible.

Conveying is done at the rate of 50 tons an hour, with the longest conveying distance approximately 690 feet; together with branch lines making a total of about 1070 feet.

A Fuller Rotary Single-stage Compressor furnishes the necessary air to the Fuller-Kinyon Pump for conveying.

If you handle bulk shipments of dry, pulverized materials it will be worth your while to learn about Fuller air conveying systems now. Write today!

Fuller
CONVEYS BY AIR
CLEAN . . . SAFE . . . EFFICIENT

FULLER COMPANY, Catasauqua, Penna.

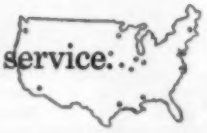
Branch Offices

Chicago • San Francisco • Los Angeles • Seattle • Birmingham

P-147
1644

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS . . . COMPRESSORS AND VACUUM PUMPS . . . FEEDERS AND ASSOCIATED EQUIPMENT

Here's Why Bemis is Your Best Multiwall Paper Bag Source...

Since 1858, Bemis has SPECIALIZED in making bags. Bemis buys immense quantities of kraft paper and so can get the "pick of the crop." Bemis laboratories are the watch dogs of paper quality. Bemis engineers work constantly on new and better bags for diversified products. Bemis' twelve multiwall plants are strategically located to give unexcelled service... 

Bemis

BEMIS BAG COMPANY

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

"EUC" SCRAPERS

Haul More Yardage At Less Cost

The "Euc" Scraper has a struck capacity of 15.5 cu. yds., 21 yds. heaped... 10 speed transmission ... 275 h.p. engine... top speed, loaded, 28.2 m.p.h.

Four wheel Euclid tractor provides easy, positive steering, excellent maneuverability, and has ample power, traction and flotation for fast loading and travel on steep grades and soft fills.

Owners in all parts of the country report that the Euclid Scraper with a heaped capacity of 21 cu. yds., has outperformed other scrapers of comparable size on a wide range of jobs. As one leading contractor puts it, "The 'Euc' outhauled other scrapers, had less down time, and maintenance costs were about 50 per cent less." After completing a rush airport job, one with a wide variety of soils, another contractor stated, "We're glad that our choice was Euclid over all other makes of rubber-tired scrapers."

Because of fast, easy loading, high travel speed, good traction and flotation and excellent maneuverability, Euclid Scrapers move more loads per hour at more profit per load. Have your nearest Euclid Distributor give you complete information and job proved performance data on this Euclid Scraper—get more production at less cost!

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

You?...

a Doubting Thomas?

IF YOU'RE a man who has to be shown, we're right in your corner. Just give Roebling "Blue Center" Steel Wire Rope one try... see for yourself how it saves time and costs you less on the job.

Two out of three wire rope users in the quarries prefer Roebling rope. Call your nearest Roebling office for a Field Man to suggest the best ropes for your particular purposes.

ROEBLING

A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 815 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1005 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE TRENTON 2, N. J.

Pit and Quarry

"Our Dodge trucks are always ready for more work!"

Why new Dodge *"Job-Rated"* trucks help heavy haulers haul down bigger profits!

New stepped-up power!

New Dodge trucks move heavy loads onto and over the highway in jig time. Little wonder, too, with horsepower as high as 171 gross; PLUS higher-than-ever compression ratios. Optional twin carburetion and exhaust systems also give ample power for hauling extra-heavy loads. And because they are *"Job-Rated"*, Dodge trucks are good for years of rugged toil . . . years of thrifty service.

Real rock-ribbed value

On top of regular Dodge extra values, imagine how these new features bolster your truck investment: reinforced cab construction, new "dual-primary"-type brakes that anchor tons of payload on steep inclines, increased engine cooling capacities. It won't cost a dime to drop in and chat with your friendly Dodge dealer. Have him explain how Dodge *"Job-Rated"* trucks fit into your hauling picture.

. . . says **Glenn M. Sayers,** *General Foreman, Whiteside County Highway Dept., Morrison, Illinois*

"Our Dodge trucks do a nice job for us.

"We have four 2½-ton dumps and use them regularly for all sorts of rugged work. They haul road gravel, limestone, black top matter, quarry rock . . . and they plow snow as well!

"We are well satisfied with the good, dependable performance of Dodge. Our drivers also tell us that the dependability of Dodge is tops.

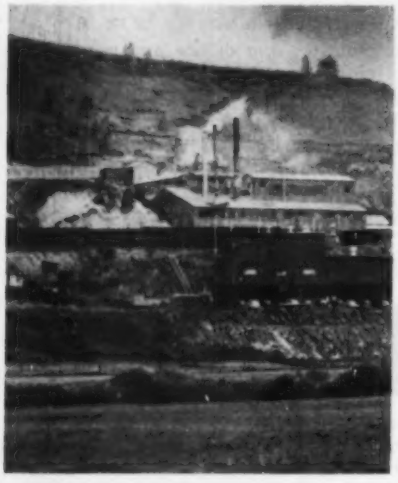
"Our Dodge trucks are always ready for more work!"

DODGE

"Job-Rated" TRUCKS

At United States Gypsum's plant **Belt reinforced with "Cordura" rayon solves tough transportation problem**

Timbered tunnel, left center above, houses conveyor belt reinforced with "Cordura" rayon. The belt is in two sections with a total length of 2,800 feet. Over slope 5.5% downgrade and 7.6% upgrade it travels 250 feet per minute, with a capacity of 100 tons of gypsum per hour.



Whether to go around a hill with railroad track or road, or over it with aerial tramway, or through it with a belt conveyor was the problem faced by the engineers of United States Gypsum's Heath, Montana, plant. They decided on a belt conveyor through the hill as most logical and most economical.

The belt, pictured above, was manufactured by Goodyear Tire & Rubber Company, on a carcass of Du Pont Cordura* High Tenacity Rayon.

Now, for a few cents a ton, gypsum is transported from the mine to the mill. The engineers found that belting reinforced with "Cordura" has greater strength and better troughability. That's because man-made "Cordura" rayon yarn is inherently stronger than yarn of natural fibers. It is made of endless strands with no short ends to part under stress. Stretch is reduced to a minimum. "Cordura" thus permits a thinner . . . yet stronger . . . belt, which is naturally more flexible, sits more snugly on the center idler—and therefore trains and troughs better.

Find out about conveyor belts made with "Cordura" rayon. We'll be glad to send you the names of suppliers . . . also give you complete information about "Cordura" in the booklet "Sinews for Industry." For your FREE copy, write: Textile Fibers Dept., Room 2520-Q, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware. (*Offer good in the United States only.*)

*REG. U. S. PAT. OFF.

Du Pont "*Cordura*" High Tenacity Rayon

STRENGTH AT LOW COST

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

"Watch for 'Cavalcade of America' on television"

WIRE ROPE, too, resists attack with the RIGHT KIND of muscle

Brawny chest and shoulder muscles make the gorilla a formidable foe in the eternal warfare of the jungle. Defending himself and his family, this 450-pound heavyweight stands erect and fights back with sledge-hammer blows of his mighty forearms.

In wire rope, too, it takes the right kind of muscle to resist constant attack of abrasion, corrosion, bending fatigue, load strain and shock stress.

Complete quality control of Wickwire Rope means that you can always count on the right grade of steel and size of wire; the right construction and lay of the rope for best results on your particular job.

See your Wickwire Rope distributor or contact our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION — Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION — Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION — Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

WICKWIRE ROPE
A CF&I PRODUCT

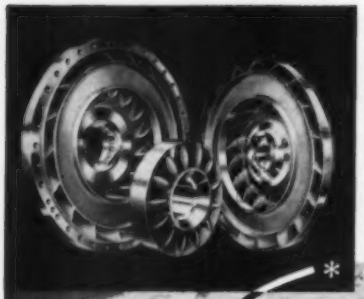
1221

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

WICKWIRE ROPE

CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



Eventually EVERY Shovel Will be TORQUE CONVERTER Driven

But You Can Profit by its advantages NOW with a MANITOWOC

Get *extra* yardage, higher daily output, faster cycles, more bail pull, less breakage, smoother operation with a TORQUE CONVERTER equipped MANITOWOC.

Gives you *extra* power for tough going — smoother, faster acceleration throughout the entire cycle — enables you to handle bigger loads, shock loads, jars and jolts without damage to mechanism.

It's the greatest advancement in shovel history — and it's yours NOW, in the Manitowoc line. Manitowoc pioneered this development — more than twelve years ago — hundreds of units now operating. The big swing is to the mighty Manitowocs — Torque Converter driven. Get complete details from Manitowoc Engineering Corp., Manitowoc, Wisconsin.

MANITOWOC

SHOVELS 1-5 YD. Speedcrane CRANES 18-100 TON

* BALANCED POWER

Engine operates at maximum efficiency at all times — full engine power for full loads — just enough power for light loads — automatically selected. Engine cannot be stalled — no delays waiting for engine to pick up speed.

SMOOTHER OPERATION

Oil cushion absorbs jolts and jars. Saves cables, clutches, gears and assemblies. Less down time means more yardage.

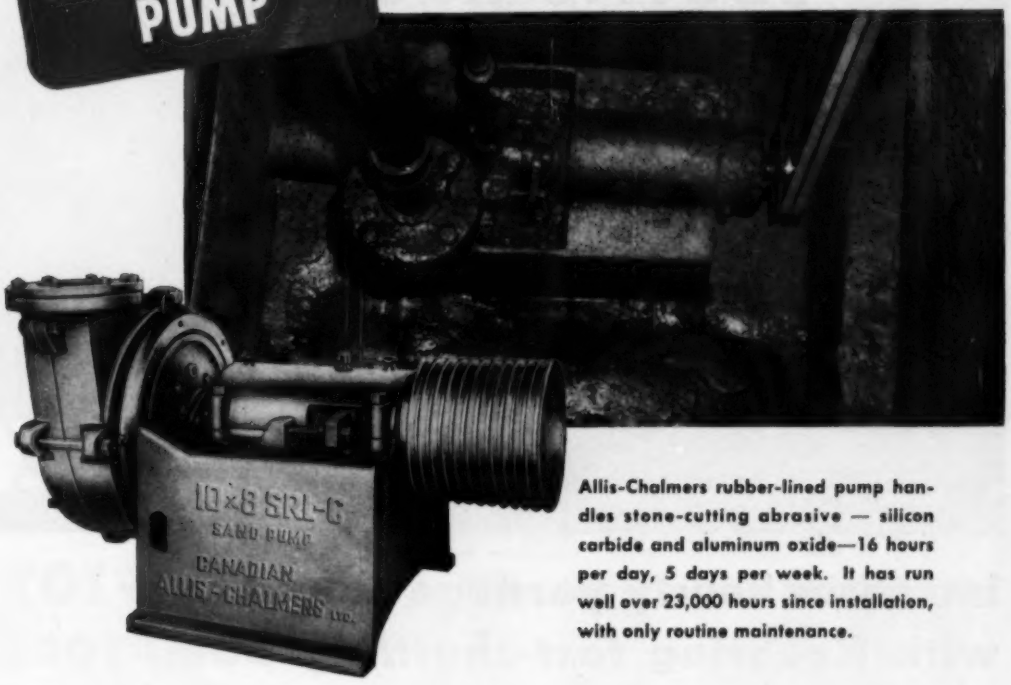
PRECISE CONTROL

"Fraction of inch" control by either hand throttle or foot accelerator, without slipping clutches or shifting speeds. Makes an expert out of an average operator. Ideal for crane service, setting steel and stone, and general erection work.

. . . OVER 23,000 HOURS and still running!

(Best Previous Pump — 1040 Hours)

ALLIS-CHALMERS
RUBBER-LINED PUMP



Allis-Chalmers rubber-lined pump handles stone-cutting abrasive — silicon carbide and aluminum oxide—16 hours per day, 5 days per week. It has run well over 23,000 hours since installation, with only routine maintenance.

PUMPING RECORDS like this are not unusual with the Allis-Chalmers rubber-lined pump. Service life up to 50 times that of the best alloy pumps is common. Pumping costs are greatly reduced because of reduced maintenance and repair costs and also because of fewer production interruptions and less lost production time.

Unique Lining Method

The rubber lining of the Allis-Chalmers SRL rubber-lined pump is bonded to a heavy steel skeleton which is bolted into the casing. This arrangement provides maximum support for the liners but makes them easy to remove when it is found necessary.

Each Installation Specially Engineered

Every pump is individually engineered to provide the best possible performance for the application involved. Special rubber linings of various compounds handle a wide variety of slurries at low cost per gallon pumped.

If you are handling sand, taconite, grinding mill discharge, tailings or any other abrasive slime or slurry and want longer pump life, see your Allis-Chalmers representative. Or write Allis-Chalmers, Milwaukee 1, Wis., and ask for Bulletin 08B7311.

A-3953

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

increases hourly yardage output over 10% with Koehring *fast-shuttling* DUMPTORS

THERE is no need to turn at the loading unit, along narrow haul roads, or on the fill with fast-shuttling 6-yard Dumptors. Koehring constant-mesh transmission gives the same 3 fast speeds forward and reverse, lets Dumptors operate with equal ease in both directions. Every turn saved cuts 15 seconds off your cycle time, and adds up to an important increase in yards hauled per hour. Here's a typical example:

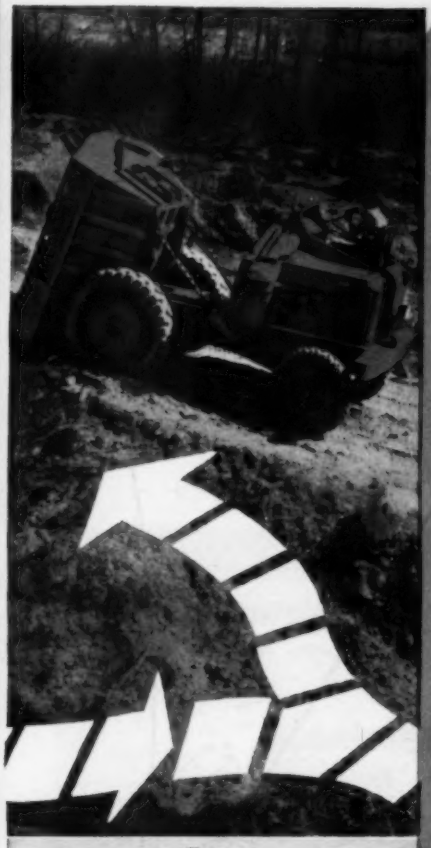
On a 1,000-foot haul, eliminating only 2 turns saves ½ minute every round trip. Where you would get an average of 13.6 trips per hour with 2-turn operation, Dumptor *no-turn shuttle hauling* gives you 15.4 trips — an increase of 1.8 trips an hour on the same 1,000-foot haul.

Fast, easy spotting and 1-second gravity dump help keep production high. Costs stay low because there are no complicated, mechanical body hoists to slow up haul cycles — no expensive hoist maintenance or down time to eat into your profits. Let your Koehring distributor show you Dumptor's many other cost-cutting advantages.

KOEHRING COMPANY, Milwaukee 16, Wis.
Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

KOEHRING (KOEHRING HEAVY DUTY) **DUMPTOR®**

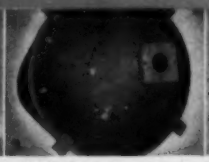
CK238



This mountain-side job shows typical no-turn shuttle advantage. Hauling along narrow ledge, Dumpster spots close to Koehring 1½-yd. 605, gets its load, drives to fill, dumps, returns to shovel — without turning.

INCREASE BATCH PLANT PROFITS
with Johnson accessories

Rotary Vane Compressor gives 7 cu. ft. air pressure per min. cement aeration. 15-lb.-limit relief valve.

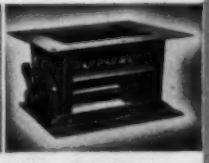


Aeration Fittings properly spaced in Johnson bins and silos keep cement free flowing.

2-Way Elevator Discharge Valve, a flop-type chute, directs flow of cement to the storage tank.

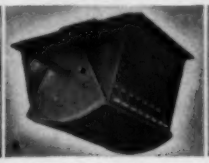
Pivoted Distributor feeds aggregates to bin sections. Positions and locks by ground control wheel.

Bin Signals accurately register high and low levels in cement or aggregate. Dust-proof.



Rotary Plug Valve accurately controls cement flow. Plug operates freely in self-aligning bearings.

Receiving Hopper 30 and 50-bbl. sizes, feeds bulk cement to elevator. All-welded, weather-proof.



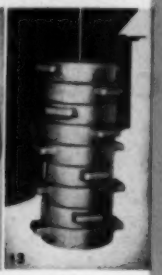
Aggregate Fill Valves single clam, radial type for jam-proof closing. Hydraulic pressure lubrication.

Tunnel Gate for stockpile reclamation. Single radial clam. Skirt board is hinged, opens and locks securely.

Safety Cage of 28" steel, welded to casing, can be furnished with all Johnson elevators.

Water Weigh Batchers, semi- or full-automatic types. 120 and 240-gal. sizes available.

Elevator Buckets in many sizes for aggregates, and cement. **Steel Chain** has carburized knuckles.

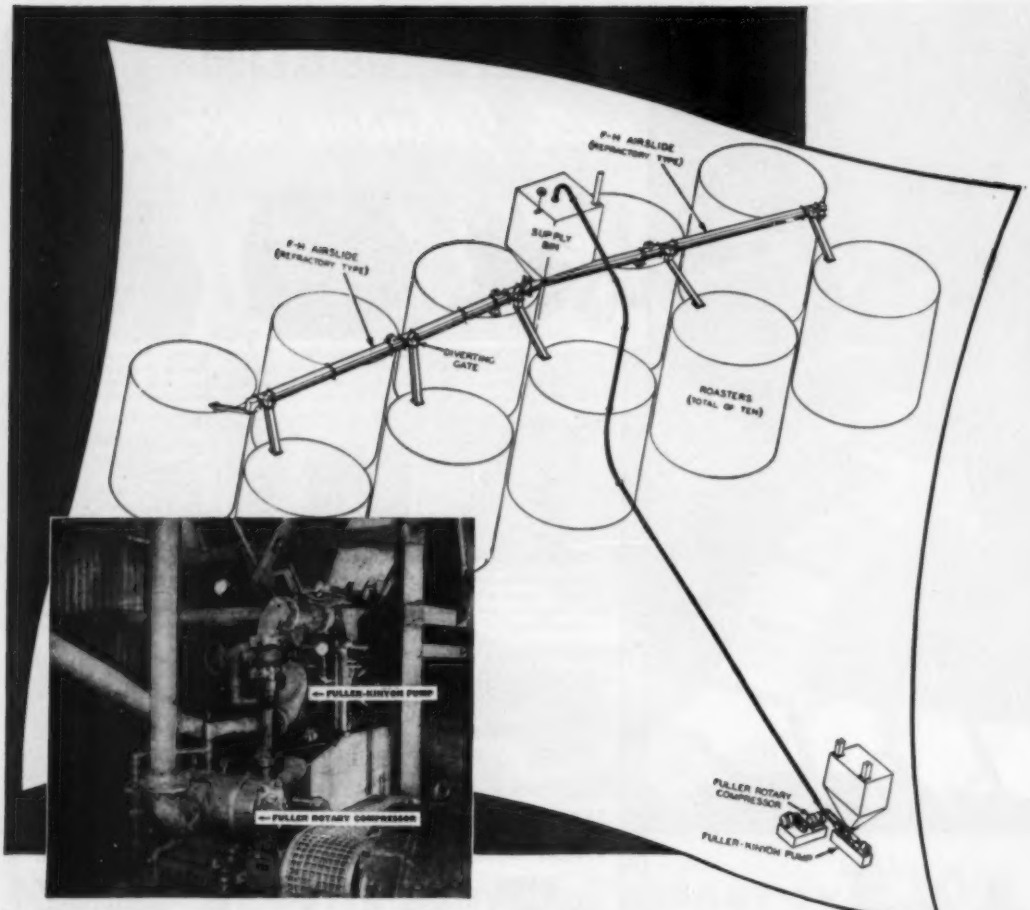


Batcher Test Weights in sets of nine, 50-lb. calibrated units, and two 25-lb. steel hangers.

Mail to **C. S. JOHNSON COMPANY**
CHAMPAIGN, ILLINOIS
(Koehring Subsidiary)

Send us literature on items checked: 1 2 3 4 5 6 7 8 9 10 11 12 13

NAME _____ TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____



Conveying "Hot Stuff" at Noranda Mines--- with Fuller-Kinyon Pump and F-H Airslides

Problem: To convey hot flue dust from Cottrell precipitator collecting hoppers, and distribute uniformly to ten roasters, without dust or loss.

Solution: After long and careful study by both Noranda and Fuller engineers, it was decided to install a Fuller-Kinyon Conveying System as the most practical and efficient method of conveying from the precipitator to a supply bin. A Fuller-Kinyon Pump, with water-cooled seal, handles this flue dust at temperatures up to 800 deg. fahr., at rate of 25 tons an hour, in a highly satisfactory manner, through a conveying line of approximately 220 feet. From the supply bin, F-H Airslides, of the refractory type, convey and distribute the material to the roasters, with no dust or loss.

A Fuller Rotary Single-stage Compressor furnishes approximately 478 c.f.m. of air at 15-lb. pressure, to the Fuller-Kinyon Pump, through a direct-connected air line.

When your problem is conveying dry, pulverized materials, why not have a Fuller engineer make a study of your requirements. His findings may result in savings you never anticipated or thought possible. Write us today!

FULLER COMPANY, Catasauqua, Pa.

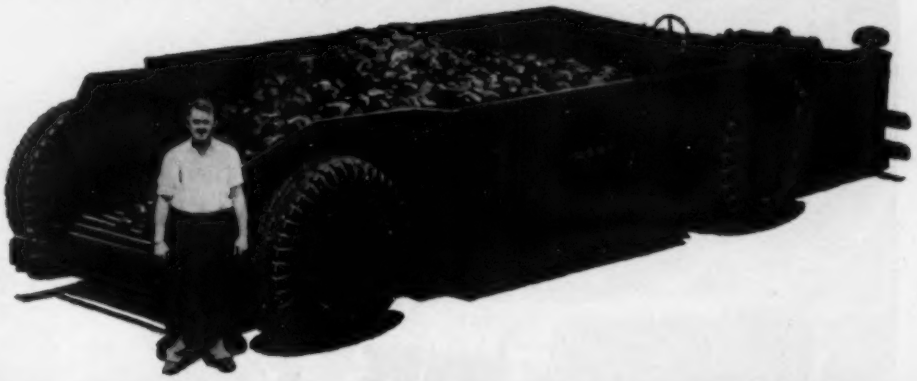
Branch offices

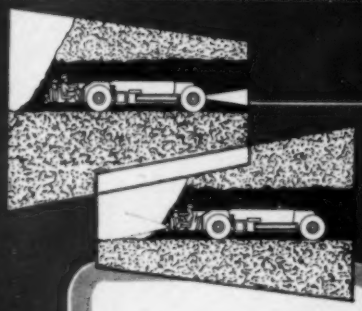
Chicago—San Francisco—Los Angeles—Seattle—Birmingham

G-91
1987

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—COMPRESSORS AND VACUUM PUMPS—FEEDERS AND ASSOCIATED EQUIPMENT

DART DOES IT AGAIN!



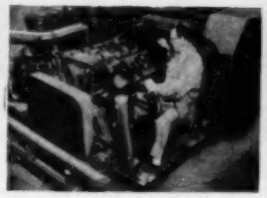


A Newly Designed

UNDERGROUND

DIESEL POWERED TRUCK
18 TONS
60 INCHES HIGH

Hydraulic power enables conveyer discharge feed from 0 to 60 feet per minute.



The operator's "office" puts all instruments and controls in easy reach. Excellent vision driving in either direction.

POWERED BY 275 H.P. Diesel engine with torque converter and fully reversible transmission. Perhaps the largest H.P. rating to be used on an underground truck. Design is adaptable for conversion to electric power.

FULLY REVERSING, large Hydraulic Motor operates apron conveyor. Breakage and maintenance are reduced to a minimum.

EXHAUST SCRUBBER is approved by underground safety engineers in most areas.

HYDRAULIC STEERING (cable-controlled) with dual operator controls for shuttle operation.

THE UNUSUAL ENGINEERING and design in the new DART UNDERGROUND is indicative of DART'S constant aim . . . to carry more, faster and with greater efficiency.

For additional information, write:

DART TONNAGE ENGINEERED TRUCKS
Kansas City 8, Missouri

NEWS from the Field . . . as reported by . . .

ARKANSAS — "2000 hours on my *600* with no trouble of any kind. Holding 100 pounds pressure while operating two 4" wagon drills." Stays on till the job is done — that's the way the Gardner-Denver *600* is built.

PENNSYLVANIA — "Have two WH600 Portables operating side by side . . . keeping the job right on schedule . . . have required only routine maintenance."

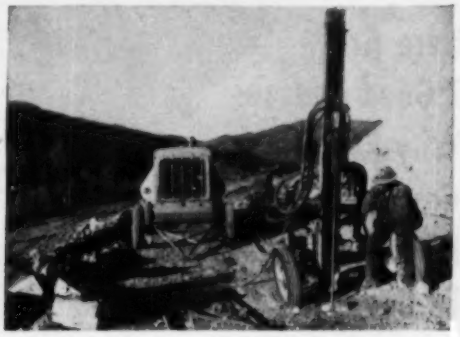
W. VIRGINIA — "In continuous service . . . and running like a watch." Starts easily — keeps on going. No tricky adjustments to require constant attention.

Contractors now using the GARDNER-DENVER 600

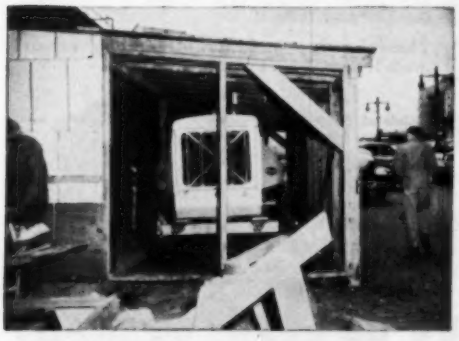
PENNSYLVANIA — "Side by side test convinced us the *600* saves fuel . . . as much as one gallon in four on our job." The *600* is economical with oil, too.

WASHINGTON — "Our regular operator required no special training to run the *600*. Well pleased with the performance of this heavy-duty unit."

CALIFORNIA — "Around the clock operation . . . have five machines in continuous service . . . very satisfactory." Ask the men who use the *600*.



CANADA — "Increased drilling footage . . . running my *600* ten hours a day with no trouble." The *600* speeds your work — increases profits.



NEW YORK — "Smooth and quiet . . . even at full capacity." Balance a 50-cent piece on an operating *600* — see for yourself how free it is from vibration.

KANSAS — "Have one of the first machines built . . . highly pleased. Operating two 4" wagon drills." The *600* will see you through many a tough job.

For complete information, write to Gardner-Denver Company, Quincy, Illinois. In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 13, Ontario. Since 1859. The quality leader in compressors, pumps and rock drills for construction, mining, petroleum and general industry.

SWEATING OVER A

Hot Material*

HANDLING PROBLEM?

Here Are 7 Good Reasons Why Rex Pan Conveyors Can Solve It For You When Cooling En Route Is Desired

1. Conveyor designed so that ratio of mass of dead load (pans, etc.) and live load is correct for efficient heat transfer. Maximum initial temperatures are thus easily handled. Localization of intense heat can be controlled.
2. Shape of pans provides maximum surface area for efficient cooling and is suitable for carrying up inclines up to 25°.
3. Chain and carrying rollers removed from intense heat zone.
4. Wear largely confined to heavy, carrying outboard rollers on sleeve-type bushings made of hard, long-wearing, heat-treated white iron.
5. Unique outboard roller construction permits easy servicing without disassembling chain or conveyor. Simple graphite lubrication.
6. Low power requirements because of large diameter carrying rollers.
7. Through rods at joints for increased rigidity and much longer chain life.

* Calcined, Sintered, Briquetted, Nodulized, etc., over 300° F.

Investigate the ways that Rex Apron and Pan Conveyors can help solve your hot material handling problems today. Call your nearest Rex Field Sales Engineer or write for complete details. Chain Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT REX COMPANY

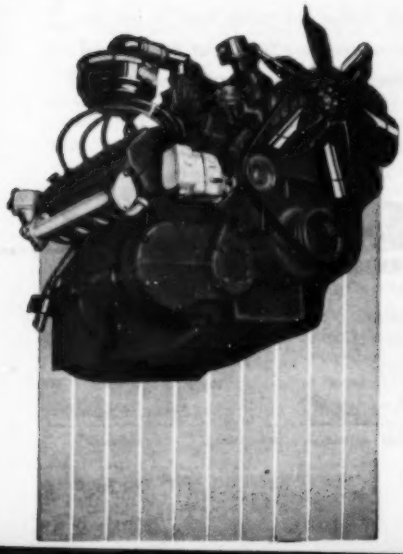
Chain Belt COMPANY OF MILWAUKEE

Atlanta • Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville Kansas City • Los Angeles • Louisville • Midland, Texas • Milwaukee • Minneapolis New York • Philadelphia • Pittsburgh • Portland, Oregon • Springfield, Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

Distributors located in principal cities in the United States and throughout the world
EXPORT OFFICES: Milwaukee and 19 Rector Street, New York City

Photo courtesy Hobart Brothers Company, Troy, Ohio

Chrysler horsepower on the ground for added Safety in the Air . . .



The moment the big plane stops and the pilot cuts the engines, the generators, which in flight supply electrical power to the batteries, stop too. But the electrical equipment in the plane—air conditioning, lights, radio, food containers, everything electrical—continue operating off the plane's batteries. Only for a moment, however. In that length of time a self-propelled and self-powered energizer takes over and supplies all necessary current, even starting the plane's engines when it's time to leave.

Among the most popular mobile ground power units are the "Power-Pull" units manufactured by Hobart and powered by Chrysler. The unit pictured uses the mighty 180 horsepower Chrysler V-8 Industrial Engine and can furnish 1000 amperes, 28.5 volts of direct current under continuous operation—enough to handle the electrical load of the largest aircraft. Power from the same engine propels the unit, enabling it to serve also as a towing tractor.

This is another in the long list of important uses of Chrysler Industrial Power. Whether your equipment requires V-8 or Six cylinder engines, Chrysler can supply them with gasoline, propane or natural gas burning carburetor, 3, 4 or 5-speed transmission and other optional equipment.

For your power needs, see a Chrysler Industrial Engine Dealer, or write: ***Dept. 146, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER
Industrial Engines

HORSEPOWER WITH A PEDIGREE

P&H Diesel Engines

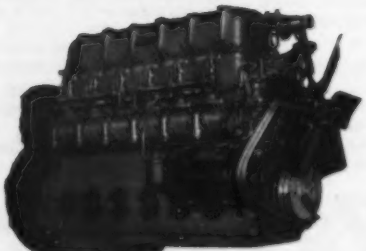
(2-CYCLE)

Can your diesels match this torque curve?

This is the torque curve for the P&H Model 687-C Diesel Engine. Note how the torque characteristics are sustained throughout its entire horsepower range.

That means steady, responsive power at all speeds — greater lugging "ability" for those toughest jobs. It's the kind of unfaltering performance that assures more profits in any service, constant or intermittent.

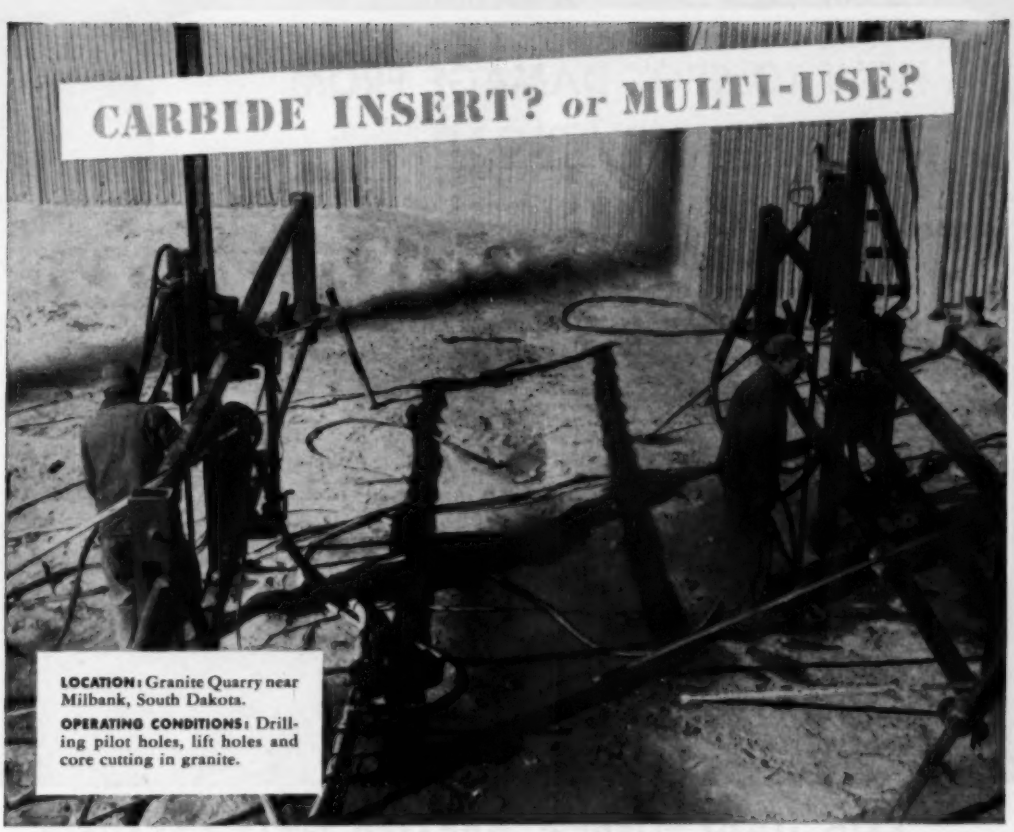
Steady torque for steady work is just another outstanding feature of P&H Diesel Engines — America's most advanced line. Ask your P&H Diesel representative for the full story. Or write for literature.



P&H Diesel Engines are built in 1, 2, 3, 4 and 6-cylinder models — up to 145 h.p.

P&H DIESEL DIVISION
HARNISCHFEGER CORPORATION
CRYSTAL LAKE, ILLINOIS

the P&H *Line*


CARBIDE INSERT? or MULTI-USE?
LOCATION: Granite Quarry near Milbank, South Dakota.
OPERATING CONDITIONS: Drilling pilot holes, lift holes and core cutting in granite.

Melrose Granite Co. cuts drilling time 25% with TIMKEN® carbide insert bits!

PILOT hole drilling, core cutting, lift hole drilling—the Melrose Granite Company uses Timken® carbide insert bits for all these drilling jobs—and has cut drilling time 25%!

Timken carbide insert bits are always best for highest speed through hard and abrasive ground. They're most economical for constant-gage holes, small diameter blast holes and very deep holes.

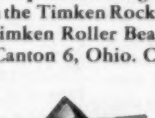
But they may *not* always be best for *all* your drilling jobs!

When you're drilling ordinary ground, Timken multi-use bits are most economical! With correct and controlled reconditioning, they give you lowest cost per foot of hole when full increments of steel can be drilled.

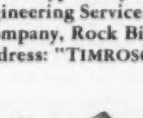
Best of all, you can change from Timken carbide insert bits to Timken multi-use bits, easily, quickly—right on the job! As many as 93 different Timken bits in the same thread series fit the same drill steel.

All Timken bits are made of electric furnace Timken fine alloy steel and have the shoulder union developed by Timken that protects threads from drilling impact.

For help in selecting the best bit type for your job, call on the Timken Rock Bit Engineering Service. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit

your best bet for the best bit ...for every job

TIMKEN

TRADE-MARK REG. U.S. PAT. OFF.

. . . AND WHY THERE'S GREATER HEAT STAMINA IN ANACONDA'S NEW MINING MACHINE CABLE

Blisters, formed by gases from overheated installation, are a sure sign of cable overloading. A torn cable may result. Since you can't always control overloads, it's important to choose *quality* cable.

Today, due to better design, jackets and insulation, good cables shouldn't cook on the reel the way they used to. But this only makes overloads harder to detect. They still may be present . . . caused by too small a conductor, overloaded machines, voltage drop or even layering of the cable. With 4 layers on the reel, according to I.P.C.E.A., unventilated bottom layers lose 65% of capacity.

WHY THE NEW ANACONDA CABLES ARE SAFER

First, they are more flame-resistant. Jacket is made from a new neoprene formula. Improved cold-rubber insulation gives greater heat stamina. Patented breaker strip* insures a safer ground. No ANACONDA Cable has ever failed a U. S. Bureau of Mines flame-test!

CABLE LIFE NOW MUCH LONGER

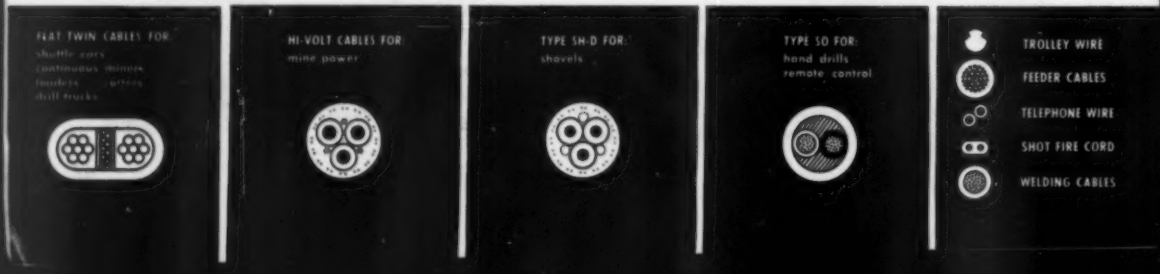
In 15 mines recently surveyed, ANACONDA Cables on shuttle cars are lasting up to 300% longer than cables made only a few years ago. Together, jacket and insulation protect these cables better – especially in wet mines where sliver-cuts can cause shocks. The cables are tougher. New-type stranding flexes better under tension.

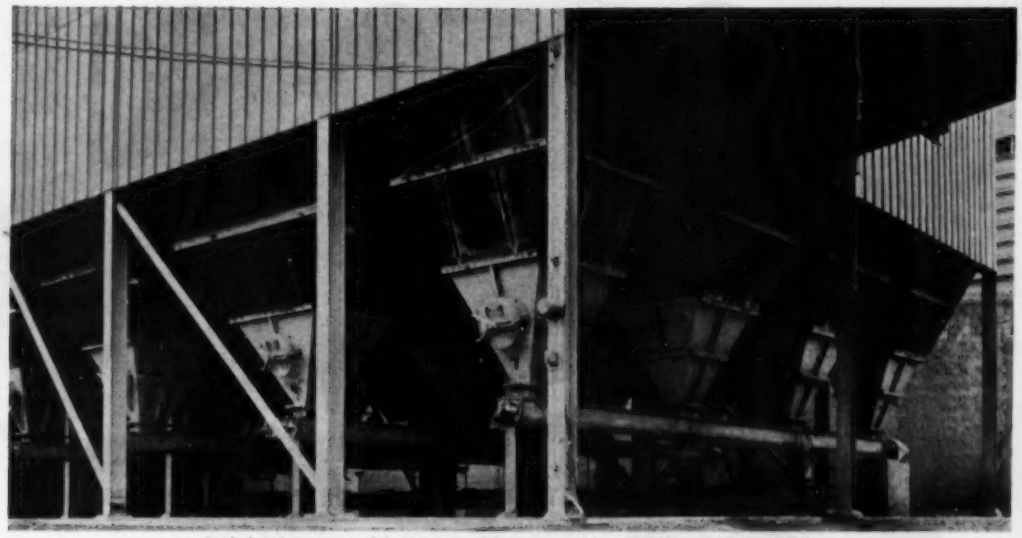
All this means economy because *one* break in cheap cable costs more than you can save by buying on price. For a sample of this new cable, call your Anaconda Sales Office or Distributor. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.* 55760

ANACONDA®

TODAY'S HEADQUARTERS FOR MINE CABLE

*U. S. Patent No. 2,455,773





Stack dust from cement kilns is conveyed from twenty-four precipitators by six Link-Belt Screw Conveyors. Collected dust is then reintroduced into cement manufacturing process.

There's no substitute for "total engineering" in screw conveyors

LINK-BELT integrates all components to give you the right screw conveyor for your job

HERE'S how "total engineering" works for you when you buy Link-Belt Screw Conveyors.

First, conveying specialists analyze your problem. Then, Link-Belt's vast experience in design and manufacture is at your command to recommend the screw conveyor—or system of conveyors—for your particular requirements. The right components are then selected from Link-Belt's complete range of types and sizes.

Link-Belt "total engineering" on your screw conveyors is your assurance of efficient design . . . balanced performance.

To benefit from Link-Belt's materials handling experience and engineering service, contact the Link-Belt office near you.

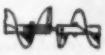
LINK-BELT designs and builds all components

SCREWS—Link-Belt makes a complete range of conveyor screws—Helicoid, Sectional Flight, Cut Flight, Ribbon Flight, Paddle type and other special types for such diverse applications as feeding, conveying, mixing, agitating, stirring, blending, etc.

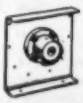
HANGERS—Available in a variety of styles and mountings, with various bearing materials and steel or cast hanger frames.

TROUGHS—Link-Belt builds flanged, angle flanged, flared, rectangular, dust-seal, jacketed and drop-bottom types in steel or alloy metals. Variety of connections, supports, covers and clamps offers added design flexibility.

SPOUTS & GATES—Plain discharge spouts can be fixed or detachable. Discharge gates, flat or curved slide, can be hand or rack-and-pinion operated.



SHAFTS & COUPLINGS — Conveyor couplings and end shafts are designed for adequate torsional strength and have jig-drilled coupling bolt holes for accurate alignment.



TROUGH ENDS—Steel or alloy metal plate or cast trough ends to match all trough shapes, provide required shaft bearing support and alignment. Seal glands to protect bearings, if required.

DRIVES — Link-Belt designs and builds many forms of drives to suit specific conditions—Enclosed gear, Electrofluid, P.I.V. variable speed, and chain drives of various types.

LINK-BELT

SCREW CONVEYORS

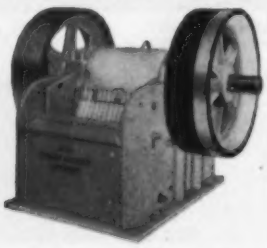
19.187-B

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

A 3 IN 1 ADVANTAGE

WITH TWINDUAL ROLLS

3 SEPARATE CRUSHING OPERATIONS IN 1 PORTABLE ROCK PLANT

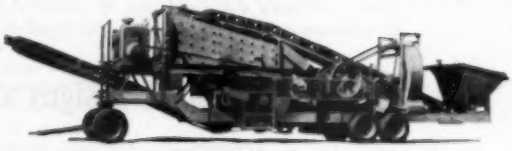


1ST. STAGE — Overhead Eccentric Jaw Crusher

Rock or gravel is fed by apron feeder to jaw crusher. Both feeder and jaws can be skid mounted for simple removal. Bar grizzly and by-pass relieves crusher of material not requiring primary reduction — reduces unnecessary wear and clogging. Pacemaker Jaw Crusher produces two distinct blows with each revolution of Universal's overhead eccentric shaft, famous in the industry for 47 years. Primary blow at the top of the jaw and secondary blow at the bottom. Force feed action and fast discharge results in high capacity, more production, top profits. Roller bearings are equipped with piston ring seals to keep lubricant in, dirt and grit out.

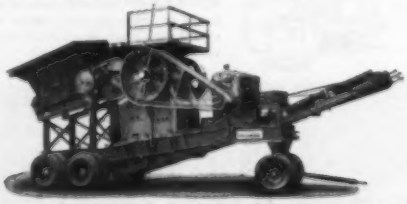
OTHER PROVEN UNIVERSAL PLANTS WITH THE EXCLUSIVE TWINDUAL ROLLS

293QS Gravel King A complete portable gravel crushing, screening and loading plant with three stages of crushing, two separate screening operations. 1824 or 2036 RB jaw crushers.

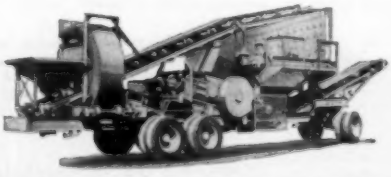


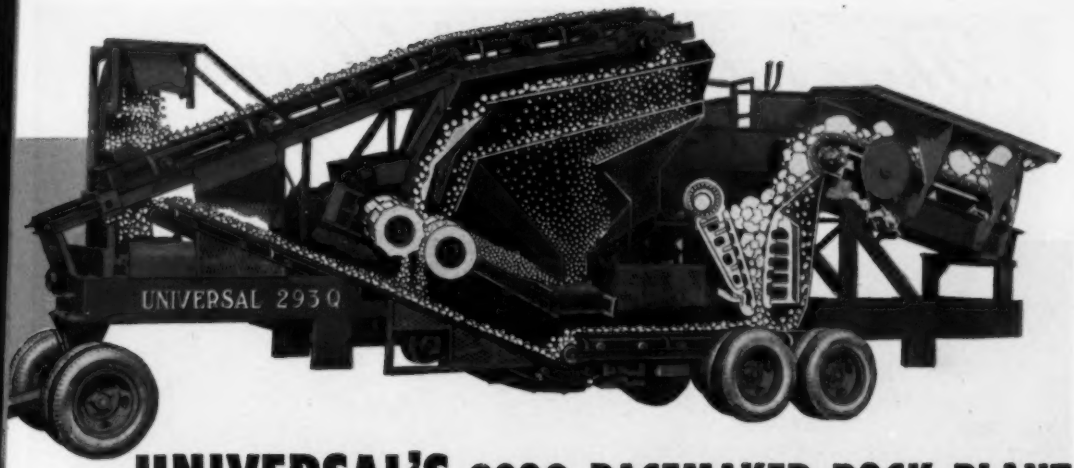
TDM24 Master Gravel Plant Especially profitable where a highly mobile, low weight plant is required for a top capacity, flexible operation. Three full stages of reduction. 1024 RB jaw crusher.

546P Portable Primary Crusher 1824, 2036, 2436 or 3042 RB Jaw Crushers. Combined with a TDS Secondary Twin Dual Gravel plant as shown above, you have a two-unit, three-stage quarry plant.



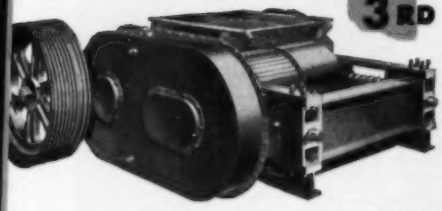
TDS30 - TDS40 Portable Secondary Plants Complete two-stage roll crushing, screening and loading plants. 30 or 40 inch TwinDual roll crushers.





UNIVERSAL'S 293Q PACEMAKER ROCK PLANT

2ND STAGE
3RD STAGE
} UNIVERSAL'S Exclusive TwinDual Rolls



The roughing deck of the screen selects only the large oversize from the first stage of crushing and routes it to the roughing rolls of the Twin Dual Roll Crushers. Roll feed utilizes full width of rolls. 30% to 50% of the material crushed in this second stage is finished and removed when returned to the screen. 15% recirculates and the balance is reduced by the third stage. The finishing deck of the screen removes specification material resulting from any of the three stages of crushing. The oversize from this finishing deck is chuted to the finishing rolls of the Twin Dual Roll Crusher.

PLUS THESE UNIVERSAL ADVANTAGES

Portability . . . saves time in moving and setup, cuts operating costs on the job. Apron feeder and jaws can be skid mounted to obtain low rear axle weight.

Dependability . . . balanced construction, the even, steady flow of material at every stage of operation cuts "downtime" and maintenance costs.

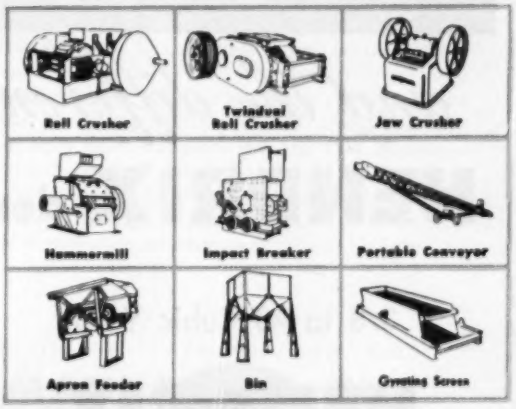
Capacity . . . again, **Balanced Construction,** big jaws, rolls, screens and conveyors feeding and discharging at capacity—produce maximum tonnage.

FOR TOP PROFITS BUILD WITH UNIVERSAL SOUNDLY ENGINEERED BASIC UNITS

Whatever your particular crushing, screening, washing, or loading problems might be, Universal equipment invites comparison. For information on the complete Universal line see your nearest Universal distributor or write UNIVERSAL ENGINEERING CORPORATION, 619 C AVENUE N.W., CEDAR RAPIDS, IOWA, a subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois.

When you move, move quickly and easily with Universal Portable Plants . . . and you move on to greater profits.

Universal's 293Q Pacemaker Rock Plant is acclaimed by owners everywhere as a top producer in the field.

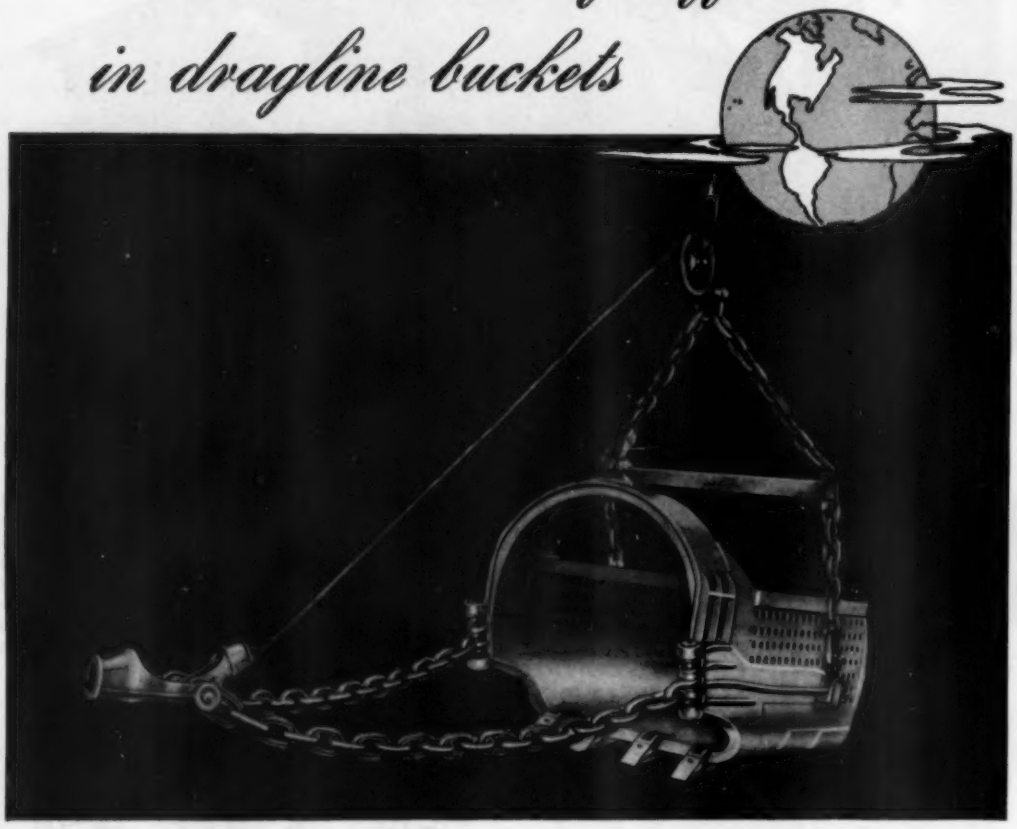


UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS IN CEDAR RAPIDS SINCE 1906

PMCP UNIVERSAL

ENGINEERED FOR TOP OPERATING PROFITS

There's a world of difference in dragline buckets



and the difference is . . .

HENDRIX design & engineering!

3/8 to 40 Cubic Yards

HENDRIX Lightweight DRAGLINE BUCKETS

You can see it immediately. The difference in Hendrix Dragline Buckets shows in design and engineering . . . in the ultimate of working efficiency that marks every Hendrix Bucket . . . no matter what the job . . . and the final results . . . PROFITS on every operation.

Hendrix Buckets Also Available Without Perforations On Special Order Only

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

Homoflex Hose—More use per dollar

Homoflex Hos *e per dollar*

Homofle *Dollar*

Hom *er dollar*

Homoflex Ho *e per dollar*

FLEXIBLE, LIGHT, BUT RUGGED AND STRONG . . . Yes, you save money because Homoflex lasts longer. It's easier to coil and uncoil . . . no pre-set twist . . . no kinking . . . easier to carry and drag. "Flexible as a Rope". Workmen like it. Cover and tube are inseparable and hosewall is strong and safe, for handling air, water, other fluids and gases. Ask the R/M distributor for Bulletin 6879. He'll tell you about other R/M hose types for steam, oil, suction, chemicals—from small 1/4" size, to huge dredging hose big enough for a man to crawl through . . . also how you get MORE USE PER DOLLAR with R/M transmission, and conveyor belt, and V-belts.

RM

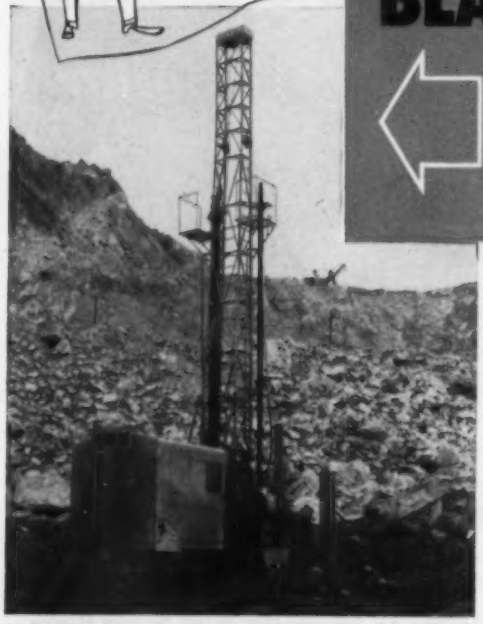
MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls

The JOY CHAMPION BLAST HOLE DRILL

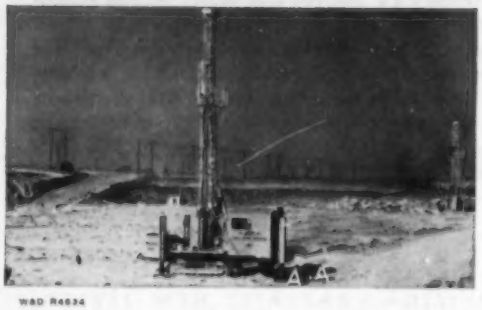
CUTS COSTS TO THE BONE!



. . . at the World's Largest Cement Plant

One Joy Heavyweight Champion Blast Hole Drill replaced three churn drills. Blasting preparation was speeded up, labor costs reduced, and lost holes eliminated. Routine production is now 300 ft. of 7⅞" hole per shift in *dense limestone!*

The ability of the machine to "over-drill" to permit over-shooting has also increased quarry output without increasing manpower. The smooth-walled holes have prompted a change from bag powder to modern cartridge loading, for improved fragmentation.



WBD R4634

. . . on one of the World's Largest Canal Jobs

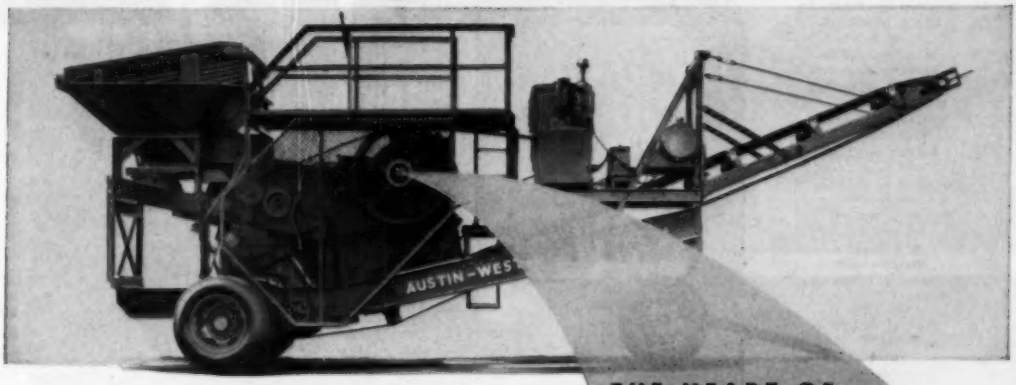
The Joy Heavyweight Champion is used for speed and economy on this large canal job in the "North" country. During the first two months of operation—while crews were being trained—the average drilling rate, including moving and setup time, exceeded 35 feet per hour, in medium hard limestone. Bit life averaged 1374.4 feet during this training period. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Galt, Ontario.*

Consult a Joy Engineer

JOY

SINCE 1851—OVER A HUNDRED YEARS OF ENGINEERING LEADERSHIP

GET *EXTRA* PRODUCTION with an AUSTIN-WESTERN "61" Crushing & Screening Plant



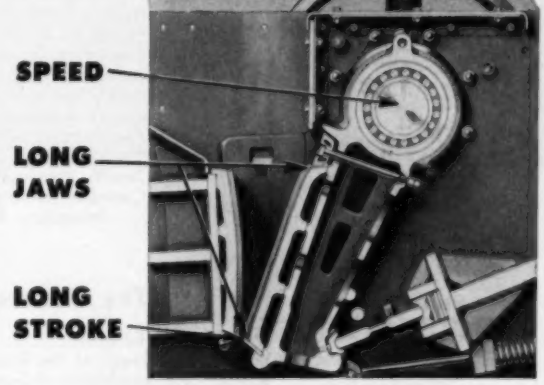
Here is a portable single pass crushing and screening plant developed for use by contractors, counties or townships. Its high production, extreme simplicity and low operating costs, have established a new high standard of operation for a plant of this type. Here are a few of the money making advantages to be found in the AUSTIN-WESTERN "61" plant:

1. High capacity 1024 Jaw Crusher.
2. 2' x 4' single deck, four bearing type scalping screen that by-passes all fines around the crusher.
3. Large, plant mounted reciprocating type feeder.
4. 24" x 26' delivery conveyor.
5. Anti-friction bearings throughout.
6. V-belts or enclosed gears on all drives.
7. Easily transported over any highway.

See an AUSTIN-WESTERN "61" plant in operation and make your own comparison as to initial cost, performance and capacity. For further facts contact your nearby AUSTIN-WESTERN distributor.

THE HEART OF THE PLANT

The 1024 Jaw Crusher with its Extra Speed, Long Jaws and Long Stroke produces more aggregate Faster—and at Lower Cost.



There are Austin-Western crushing plants for any requirement you might have . . . small portable units with single crusher and screen, multiple portable units, or stationary crushing and washing plants. We have just the plant to fit your requirements . . . each basically designed and engineered to give you maximum production at minimum cost.

Note: Austin-Western crushers are now being engineered and manufactured in Lima, Ohio, enabling us to maintain steady, top-quality production of crushers.

Austin-Western
CRUSHING, SCREENING and WASHING EQUIPMENT

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

VOL. 45 JUNE 1953 No. 12

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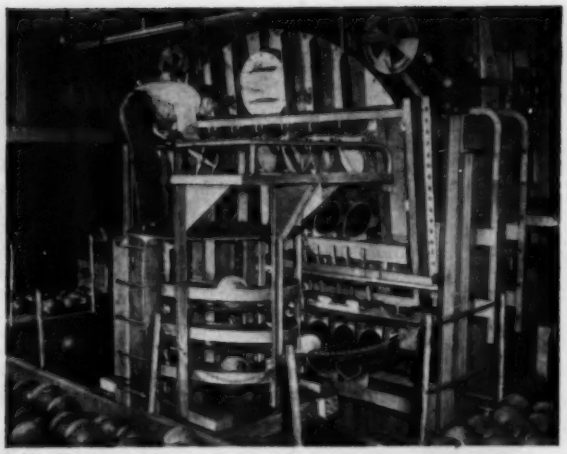

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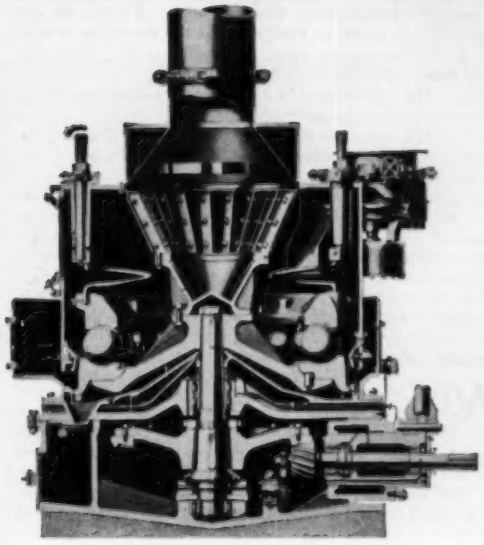

BABCOCK & WILCOX

editorial

Prosperity Not Dependent on Defense Expenditures

IT has been said so often that prosperity and war go hand in hand that many of us have come to accept it as a basic economic fact. It can be pointed out that our many wars have been accompanied by boom periods of industrial activity caused by the necessity for producing huge quantities of war materials in addition to the usual civilian production. It is also just as true that wars have usually been followed sooner or later by periods of economic depression. There have been many explanations of the reasons for this sequence of events, but none of those we have heard convince us that this sequence is inevitable.

We are not now "at war", nor are we likely to be in the near future; but we are going through the motions of preparing for one. Our defense preparations are not on the scale of those preceding World War II, but that is largely because they are being spread out over a longer period of years. They are heavy enough to have been responsible for the greatest period of prosperity in the nation's history. New records of income and production have been made repeatedly in recent years, and there is no reason to believe that 1953 will not set new records in total production as well as in most of the major segments of our economy. Industrial production and construction are at new record levels, and the production of cement and other nonmetallic minerals is also on the way to new records.

THERE are many among our leaders who do not believe that a recession must necessarily follow a reduction in our military spending. Among these is a top industrialist, Gwilym A. Price, president of the Westinghouse Electric Corporation, one of our largest industrial organizations. In a recent address Mr. Price said that Americans have "three powerful weapons and some built-in safeguards" to use if and when our spending economy faces a reduction of military expenditures. Given wise use of them, he declared, there can be no limit to what the American people can do in the years to come. According to Mr. Price, the three powerful weapons in our arsenal are:

(1) "The application of science and technology to industry on a broader and more intensive scale;

(2) "The wise use of taxing power in Washington — creative taxation to stabilize the business economy;

(3) "Aggressive, creative selling".

The first of these three "weapons", said Mr. Price, stems from our experience that the national economy thrives because we have followed this economic rule—that production costs must be steadily lowered through more efficient technological methods, with the resultant savings passed on to the consumer in the form of lower prices. "Only through constantly improving productivity can the American people earn enough to buy the product of their expanding industry," he explained.

WITH respect to the second "weapon" — the use of creative taxation — Mr. Price declared: "I do not refer solely to lower taxation, though that certainly should form a part of the much-needed overhaul and reform of our national tax laws. I refer, rather, to what can be done by intelligent tax policy to stimulate technological improvement, to provide capital investment, and to check the downtrends of the economy." He referred to two recent examples of such creative taxation and to others now under consideration.

According to Mr. Price, the third "weapon" of aggressive, creative selling "cannot transform depression into boom" but "can be an important and possibly decisive factor in supporting our expanding economy and in leveling off the valleys of the business cycle."

Among the "numerous built-in safeguards against depression" Mr. Price cited the need for new schools, roads, and other public works, and the capacity of the American people to consume.

We could quote many other authorities on the vital need for many types of construction and the fact that our government is prepared to increase federal construction expenditures and to encourage other types of construction whenever this becomes necessary. A panel of distinguished authorities from the construction, economic, government, and financial fields at the recent convention of the American Society of Civil Engineers in San Francisco was not in the least apprehensive of the effects of any possible cut in defense spending, but took a highly optimistic view of the construction future.

ACCORDING to one authority, "Defense construction spending is a relatively small portion of total security spending, so that if this construction spending does essentially stop, it does not have a marked effect on the total economy. From the long range aspect, there are two important factors favoring a high level of construction activity. First is the tremendous increase in population now being experienced. Schools, homes, community and commercial buildings, utilities, and highways all must expand. Even more important will be additional production facilities to supply food and consumer goods.

"The second factor has to do with consumption of our basic natural resources. The President's Materials Policy Commission finds not so much a shortage of resources, but an increase in demand, and a steady increase in the cost of materials. There follows a demand for technological developments, for more efficient extraction of materials — and the use of substitutes for those materials in shortest supply."

Producers of nonmetallic minerals and those in related industries can be particularly optimistic about future business prospects. Theirs are basic industries, without which industry could not produce and nothing could be built. If a reduction of defense expenditures will not materially affect the prosperity of industry in general, surely these industries should be even less affected; increased construction expenditures to offset any industrial slowdown might even push the demand for their products to the highest levels yet known.

Walter E. Jaeger

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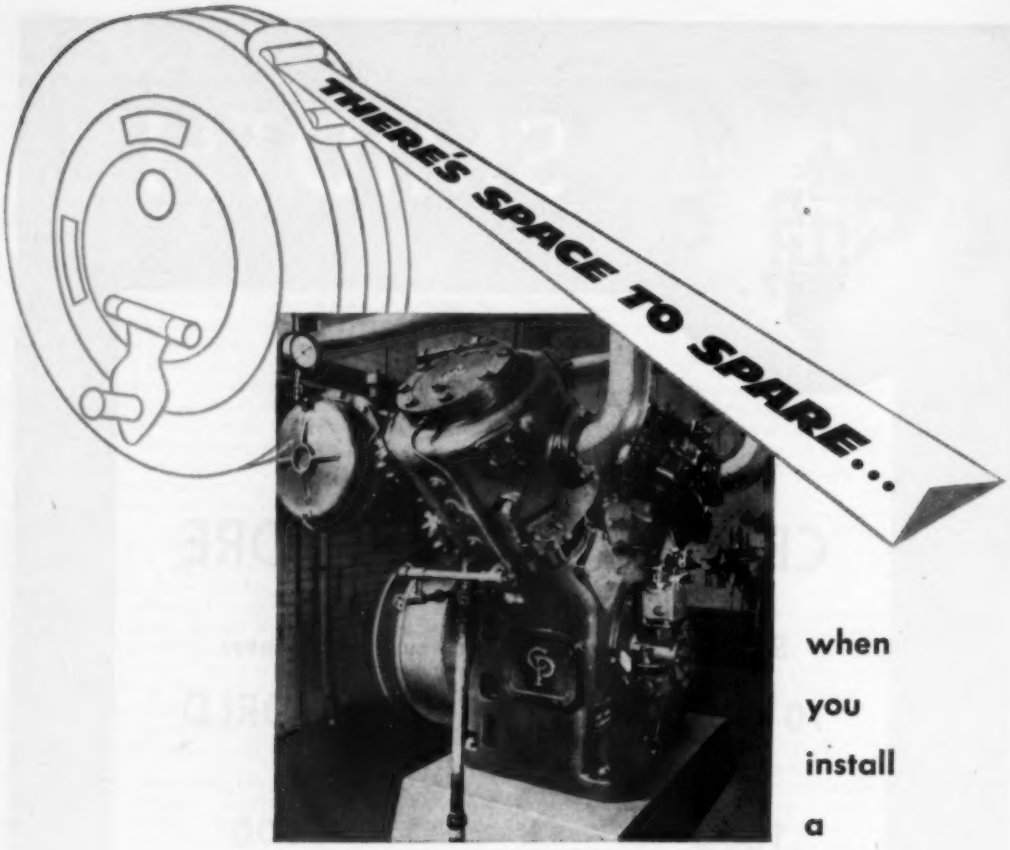

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news of the industry

PIT AND QUARRY

Huron's 46th Anniversary And "Paul Townsend Day" Celebrated at Alpena

Alpena, Mich., paid a signal honor on May 1 to Paul H. Townsend, president and treasurer of the Huron Portland Cement Company, and to his company upon the completion of 46 years of operation at Alpena. Nearly 500 persons attended the "Paul H. Townsend Banquet," which was sponsored by the Alpena Chamber of Commerce.

Featured speaker was Charles Taft, a classmate of Mr. Townsend at Yale University. Among the leaders in the cement industry who attended the festivities were Ralph L. Dickey, president of the Kelly Island Lime and Transport Company, Cleveland, Ohio, and W. C. Russell, president of the Peerless Cement Corporation of Detroit, Mich. Alpena's famed Besser Male Chorus, directed by Ralph Michaud, presented musical numbers.

The banquet was closely linked with the christening on April 30 of the motor vessel *Paul H. Townsend* in Detroit. On May 2 the craft, newest of the company's fleet of cement carriers, was docked at the Thunder Bay Quarries for public inspection.

Before his elevation to the presidency of Huron on January 27, 1953, Mr. Townsend had served in a number of posts, beginning with superintendent of distributing plants and vessels. Before he became general manager 14 years ago, he had been a vice-president and a director. He and his staff are deeply involved in the current expansion of the Alpena mill, which when completed will increase production to 26,000 bbl. daily.

Joint Group Insurance Plan For N.S.G.A. and N.R.M.C.A.

A joint group insurance plan for the National Sand and Gravel Association and the National Ready Mixed Concrete Association has been legally established and is now in operation, according to word from Vincent P. Ahearn, executive secretary of the two associations.

Under the plan as it is now set up, broader eligibility for Class I benefits—$5,000 life insurance and $5,000 accidental death and dismemberment insurance instead of $2,000 coverage in each case—are in effect for "active officers, partners, proprietors, and *executive asistants.*" The last-named group will be sufficiently broad to permit extension of $5,000 benefits to such supervisory personnel as superintendents, department heads, and chief engineers.

Benefits accruing from the operation of the joint plan will be made available to the participating employers. The only charge against the plan will be the underwriting charges of the John Hancock Mutual Life Insurance Company and out-of-pocket administrative expenses incurred by the two associations.

Pit and Quarry Receives Safety Council Citation

The National Safety Council has announced the recipients of its 1952 Public Interest Award, which went to 16 daily and 7 weekly newspapers, 79 radio and 16 television stations, 4 radio networks, 8 general circulation and 21 specialized magazines, 19 advertisers, and 13 outdoor and transportation advertising companies. PIT AND QUARRY was among the specialized magazines receiving the ward.

The noncompetitive award is made annually to public information media for exceptional service to safety.

1952 Marquette Report Tells Company's Growth Into Big-Time Concern

One of the many arresting features of the colorful 1952 *Marquette Cement Annual Report* is a page devoted to a 15-year summary of Marquette's cost value of assets, working capital, sales, net income, dividends, and other related data. The reader who compares the figures for the years 1938 to 1952, inclusive, will see an impressive record of growth. For example, in 1938 the sales total was $5,838,219; by 1952 the figure had climbed to $28,689,160. Net income and per common share stood at $893,230 and $0.95, respectively, in 1938; in 1952 the corresponding figures were $3,527,441 and $3.92.

Another page tells a graphic story of Marquette's physical expansion. From a coverage of 11 states in 1939, with 2 manufacturing plants, it had expanded by 1952 to 16 states and 7 plants.

During 1952 Marquette's shipments of portland and masonry cements totaled 11,130,000 bbl., a 19 percent increase over the figure for 1951. This was made possible by the added output of the new plant at Brandon, Miss., and the operation of an additional kiln at Des Moines.

Coming Events

June 8-10, 1953 — Hot Springs, 51st annual convention, National Lime Association. The Homestead.

June 12, 1953 — Chicago. Directors' meeting, National Agricultural Limestone Institute. Edgewater Beach Hotel.

June 15-16, 1953 — Province of Quebec, Canada. Directors' meeting, National Crushed Stone Association. Seigniory Club.

June 29-July 3, 1953 — Atlantic City. 51st annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

September 21-24, 1953 — Seattle. Metal and Nonmetallic Mineral Mining Convention, American Mining Congress.

September 28-30, 1953 — Colorado Springs. Directors' meeting, National Sand and Gravel Association. The Broadmoor.

September 28-30, 1953 — Colorado Springs. Directors' meeting, National Ready Mixed Concrete Association. The Broadmoor.

October 12-14, 1953 — Birmingham. Annual operating meeting, National Lime Association. Tutwiler Hotel.

October 21-23, 1953 — White Sulphur Springs. Annual fall meeting, National Industrial Sand Association. The Greenbrier.

P.C.A. Appoints Franks, Kennedy, and MacArthur To New Executive Posts

At the spring meeting of the Portland Cement Association held in New York City May 18-20, Carl D. Franks, former executive vice-president of the P.C.A., was elected president. The association also named G. Donald Kennedy, formerly vice-president, as executive vice-president,

Carl D. Franks

and Edward F. MacArthur, formerly assistant treasurer, as treasurer. Mr. MacArthur succeeds A. B. Stall, who died in office in February, 1952.

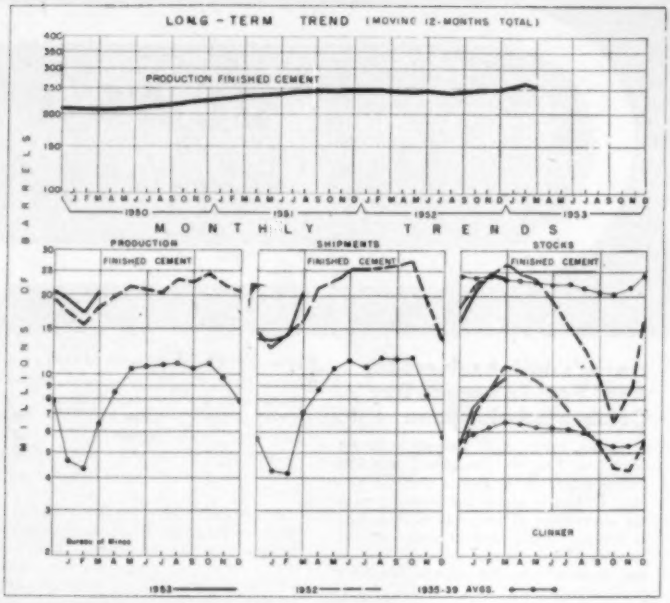
The appointment of Mr. Franks to the presidency rounds out a remarkable career of 37 years of service with the P.C.A. A former graduate of Purdue University (B.S. degree in civil engineering), Mr. Franks joined the organization in its infancy in 1916. After serving eight years as district engineer in the Indianapolis office, he became Midwest regional manager, being responsible for seven P.C.A. districts. In 1948 he was made vice-president for promotion and placed in charge of the promotional activity of the association's 27 district offices. In March, 1952, he was appointed to the new position of executive vice-president, a post in

G. Donald Kennedy

which he exercised the duties of the presidency left vacant by the death of Frank T. Sheets in November, 1951.

Mr. Kennedy joined the staff in January, 1950, as a consulting engineer and assistant to the president; for the year just past he served as vice-president. After obtaining a civil engineering degree from the University of Michigan, Mr. Kennedy gained wide experience in municipal and highway engineering. A former state highway commissioner of Michigan, Mr. Kennedy served as vice-president of the Automotive Safety Foundation from 1942 to 1948. He was the 1948 recipient of the George S. Bartlett award given for "outstanding contribution in highway progress".

Mr. MacArthur, a graduate of Northwestern University (B.S., commerce), joined the P.C.A. accounting department in 1941 and for the last six years served as assistant treasurer.



SUMMARY — Production of finished portland cement in March, 1953, totaled 20,215,000 bbl., as reported to the U.S. Bureau of Mines — an increase of 12 percent over the March, 1952, figure. Mill shipments totaled 20,813,000 bbl., 30 percent more than in March, 1952, while stocks of 23,866,00 bbl. at the end of the month were 10 percent lower than on the same date last year. Clinker production during the month totaled 21,179,000 bbl. — 6 percent more than in March, 1952.

PRODUCTION — One hundred and fifty-five (155) plants located in 37 states and Puerto Rico reported a production of 20,215,000 bbl. of finished portland cement during the month, as compared to 151 plants, which manufactured 18,095,000 bbl. in March, 1952. Clinker production during the month totaled 21,179,000 bbl., as compared to 19,958,000 bbl. in the previous March.

SHIPMENTS — Mill shipments of finished portland cement were 30 percent higher than in March, 1952, and totaled 20,813,000 bbl. All districts except one recorded higher shipments in March, 1953, than in the same month of 1952. The Iowa and Illinois districts showed gains of over 100 percent each, while several districts registered gains of from 33 to 75 percent each. The Oregon-Washington district showed a small decline of 1 percent.

STOCKS — Mill stocks of 23,866,000 bbl. of finished portland cement were on hand March 31, 1953 — 10 percent less than at the end of March, 1952 — while stocks of clinker amounted to 9,706,000 barrels — also 10 percent less than on March 31, 1952.

Industrial Asphalt Opens Fifth Plant at Sun Valley

Industrial Asphalt Company, leading asphalt producer in the Los Angeles area, recently opened its fifth plant at Sun Valley, north of Los Angeles. The event was elaborately staged for the attendant publicity. More than 500 prospective customers and other guests were served a buffet luncheon in a huge circus tent erected on the plant property. Van Johnson, motion-picture actor, broke a bottle of champagne against a supporting leg of the plant.

The estate of R. C. Ried has announced that W. R. Bendy, Cement Engineer, of St. Louis, Mo., has assumed the management and direction of R. C. Ried, Engineers, of New York, N. Y., effective May 1, 1953. A merger of the two organizations will follow.

Westinghouse Air Brake Buys LeTourneau Plants Making Earthmoving Units

Westinghouse Air Brake Company has purchased the earth-moving and related business of R. G. LeTourneau, Inc., including all fixed assets and machinery at Peoria, Ill., Toccoa, Ga., and its interest in the Australian subsidiary, for approximately $19,500,000, according to Edward O. Boshell, president and chairman of the board of Westinghouse Air Brake.

Westinghouse will also take over certain

M. R. Yontz

John Schoen

current assets of the LeTourneau company, consisting principally of inventory, at book value less reserve, at an estimated price of $6,000,000 to $8,000,000.

The new business will be operated as the LeTourneau-Westinghouse Company, a subsidiary of the Westinghouse Air Brake. No change in personnel is contemplated, and all key executives will remain with the new company. Mr. LeTourneau, who is a pioneer and recognized leader in the earth-moving equipment industry, will devote part of his time to LeTourneau-Westinghouse as a consultant on development and research.

The Vicksburg, Mississippi, and Longview, Texas, plants will remain with R. G. LeTourneau, Inc., which will continue to operate them and manufacture land

Elmer Isgren

W. Wemple

clearing equipment, cranes and other products not related to earth-moving, and special products for the government.

LeTourneau makes a full line of earth-moving equipment, including scrapers, bulldozers, and special equipment for the logging, coal, snow removal and other industries. In 1952 the company introduced a new line of tractor-drawn scrapers for use with its four-wheel, rubber-tired tractor.

Officers of the new LeTourneau-Westinghouse Company are Merle R. Yontz, president; Elmer Isgren, executive vice-president; Herbert A. May, vice-president; John Schoen, vice-president and general sales manager; Warren Wemple, vice-president and controller; Ed Greiner, secretary and treasurer; Winston Sumner, assistant controller; Herbert Kastien, assistant secretary; and Roy O. Yearick, assistant secretary and assistant treasurer.

D. D. Guilfoil of Sauerman Succumbs to Heart Attack

Dwight D. Guilfoil, 66, vice-president and general sales manager of Sauerman Bros., Inc., died of a heart attack in his home in Chicago on May 3. He had been with Sauerman since 1913, except for a period during World War I, when he served with the 108th Engineers in France.

Mr. Guilfoil had been active at various times in the affairs of the manu-

Dwight D. Guilfoil

facturers' divisions of the National Sand and Gravel Association, the Associated Equipment Distributors, and other trade associations, and was a familiar figure at the annual conventions of these groups. He was a long-time member of the Chicago Engineers' Club.

Cover Picture....

● The new diatomite plant of the Dicalite Division, Great Lakes Carbon Corp., at Lompoc, Calif., is the subject of our June cover picture. (See page 74 for story.) This view shows a complex system of piping, cyclones, and bins, with some of the structures rising higher than a normal four-story building. Both "front" and "finish" ends of the mill are visible.

Mining Congress Schedules Metal-Nonmetal Meeting At Seattle, Sept. 21-24

The American Mining Congress will hold its 1953 Metal and Nonmetallic Mineral Mining Convention in Seattle, Wash., from September 21 to 24, according to Howard I. Young, president. Some 2,000 mining men from all parts of the United States and Canada are expected to be on hand. The meeting is sponsored by the Western Division of the American Mining Congress.

A national program committee is currently being named to develop plans for the gathering and to draft a program covering national mineral policies, tariffs, taxation, labor relations, public land laws and other matters of Government policy, and improvements in mine and mill operating practices and equipment. Chairman of this national program committee is P. R. Bradley Jr., president of the Pacific Mining Company.

Among those named state and district chairmen of the program committee were the following: for Nevada, Norman E. Hanson, administrative assistant to the president, Basic Refractories, Inc., Gabbs, Nev.; for New Mexico, W. P. Morris, resident manager, Duval Sulphur & Potash Company, Carlsbad, N. M.; for manufacturers of mining machinery, John P. Courtright, president of the Marion Power Shovel Company, Marion, Ohio. Mr. Courtright is chairman of the Manufacturers Division of the American Mining Congress.

California Plant Honored For 8-Year Safety Record

At a recent meeting of the Consolidated Rock Management Club (Consolidated Rock Products Company, Los Angeles) members honored the firm's Sierra plant, at which the force had just completed eight years without a no-lost-time accident. (The last recorded accident at this plant occurred on March 16, 1944).

Congratulatory letters from California's Governor Warren and Vincent P. Ahearn, executive secretary of N.S.G.A., were read by Robert Mitchell, company president. Joe Kaplin, secretary of the Greater Los Angeles chapter of the National Safety Council, was the guest speaker.

Baker of National Gypsum Reveals $18,000,000 Expansion

Melvin H. Baker, chairman of the board of National Gypsum Company, Buffalo, N. Y., told stockholders at their annual meeting the company would spend $18,000,000 for improvements in the next two years.

In an optimistic address, Mr. Baker said the trend of the nation's economic levels will continue upward in the long run. He called the growth potential "unlimited" for the next ten years. Citing National Gypsum's sales growth from $22,000,000 to $100,000,000 in the last decade, he declared that he saw no reason why the trend should not continue.

Gypsum Assn. Reports Cut in Accident Rate Despite Man-Hour Increase

The accident-frequency rate in operating plants of the gypsum industry has been reduced approximately 30 percent in the last year, according to Lloyd H. Yeager, general manager of the Gypsum Association. The industry's accident rate, he reported, has been cut from 13.1 lost-time accidents for each 1,000,000 hours of work in 1951 to 9.51 disabling accidents per 1,000,000 man-hours in 1952.

Over the last 10-year period, Mr. Yeager revealed, the industry has reduced its accident rate approximately 65 percent. It suffered fewer accidents in 1952 than in 1953, he noted, despite a 63 percent increase in the total number of hours worked.

Mr. Yeager made this progress report at the annual meeting of the Gypsum Association in the Edgewater Beach Hotel, Chicago, at which awards were presented to winners in safety contests conducted in 48 gypsum producing plants during the last year.

The trophies were presented by M. C. M. Pollard, of the National Gypsum Company, Buffalo, N. Y., chairman of the association's safety committee. The National Gypsum Company plant in New York City won the award in Class A, which comprises plants where 600,000 or more man-hours have been worked in a 12-month period. This operation's staff achieved a total plant rating of 2.72 lost-time injuries. The United States Gypsum Company plant at Sweetwater, Tex., won second-place honors with a 2.92 rating.

National Gypsum's plant at Savannah, Ga., was the winner among the Class B plants (between 425,000 and 600,000 man-hours worked annually).

Winner among the Class C plants (between 275,000 and 425,000 man-hours) was the U. S. Gypsum plant at Charlestown, Mass. This firm's plant at Sigurd, Utah, received the Class D trophy for plants working less than 100,000 man-hours a year.

Other operations having accident-free records or no disabling accidents included the following: the U. S. Gypsum Co. plant at Jacksonville, Fla. (Class B); the Western Gypsum Company's plant at Sigurd, Utah, and the U. S. Gypsum plant at Detroit, Mich. (Class C); Ideal Cement Company's operations at Hanover, Mont., and Portland, Colo.; and those of the U. S. Gypsum Co. at Cleveland, Ohio, and Milwaukee, Wis. (Class D).

Delay Blasting Experiments Reported by Mines Bureau

Bureau of Mines experiments show that the use of millisecond-delay blasting caps in underground mines results in improved fragmentation in exploding raise rounds but may cause greater timber damage than ordinary-delay caps. The blasting experiments were carried out in the Bureau's "hard rock" experimental mine at Mt. Weather, Va.

The development of millisecond-delay electric blasting caps has brought about more flexible control over timing and detonation of individual blast charges, according to the report. Millisecond-delay caps have much shorter delay periods than ordinary ones, and are currently available in 16 periods of delay.

A free copy of Report of Investigations 4962, *Blasting No-Cut-Hole Raise Rounds Using Millisecond Delays*, can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

Net Profit Down, Sales Up For Dravo Corp. in 1952

Dravo Corporation and subsidiaries, Pittsburgh, Pa., had a net income for 1952 of $3,106,314, it was reported in the company's annual report to stockholders. This compares with a net income for 1951 of $3,720,560. The 1952 net income was equal to $6.07 per share of common stock, after preferred dividends, on 497,803 shares outstanding. Net earnings for 1951 were equal to $7.30 per share.

Work completed by Dravo during 1952 amounted to $65,292,826, largest in the 62-year-old company's peacetime history. This is the fourth successive year that total billings have set new records. Billings for 1952 were three percent greater than the 1951 total of $63,214,182.

January Lime Sales Rise 8 Percent from 1952 Total

In January, 1953, domestic sales of open-market lime (699,796 tons) were 8 percent higher than the monthly average for 1952, according to reports by producers to the U. S. Bureau of Mines. Agricultural, building, chemical, and other industrial uses increased over the previous month, whereas a slight decrease was noted for refractory use.

The table shows sales by types and major uses.

Permanente Cement Co. Cites $29,000,000 Sales—Highest Ever—for 1952

Permanente Cement Company has reported the highest sales and net earnings in the company's history in its 1952 annual report to stockholders.

Henry J. Kaiser, president, said that contributing factors in the record year were the first full year of operation from the company's expanded cement-making facilities and distribution plants and its entry into the gypsum business.

Earnings after federal income taxes for the fiscal year ended January 31, 1953, were $4,165,116, or $2.97 a share, as compared with $3,002,770, or $2.14 a share for the previous year. Included in 1952 fiscal year earnings was an income tax adjustment credit of 36 cents per share applicable to the preceding year, primarily arising from the percentage depletion computed to be allowable under the Revenue Act of 1951. Sales and operating revenues were at a new high of $29,300,460, a gain of 29 percent over the previous year's record.

Acquisition of Kaiser Gypsum Company as a wholly-owned subsidiary marked an important diversification and expansion of Permanente's allied building material products, and six months of high-level sales and earnings of the gypsum business boosted total sales.

Kaiser Gypsum Company is the second largest producer of gypsum products in the seven western states, with a capacity amounting to about 17 percent of the total gypsum products manufactured by all plants in the area, the reported stated. Acquired in the purchase were the following: two gypsum products plants, located at Long Beach and Redwood City; one of the world's largest gypsum deposits, with a crushing plant at deep-draft vessel loading facilities at San Marcos, Gulf of California, Mexico; and a 10,000-ton, self-unloading bulk cargo ship which transports gypsum rock.

Lime Sold by Producers[1] in the United States, in Specified Periods of 1952-53 by Types and Major Uses in Short Tons

	November 1952	December 1952	January 1953	January 1952
By types:				
Quicklime	530,178	570,988	564,854	529,862
Hydrated lime	132,257	118,562	134,942	132,779
Total lime[2]	662,435	689,550	699,796	662,641
By uses:				
Agricultural:				
Quicklime	3,037	2,446	1,688	2,604
Hydrated lime	6,985	6,851	9,503	10,773
Total	10,022	9,297	11,191	13,377
Building:				
Quicklime	15,235	13,839	14,642	15,725
Hydrated lime	69,307	54,689	63,929	63,780
Total	84,542	68,528	78,571	79,505
Chemical and other industrial:				
Quicklime	320,103	349,733	345,495	335,729
Hydrated lime	55,965	57,022	61,510	58,226
Total	376,068	406,755	407,005	393,955
Refractory (dead burned dolomite)	191,803	204,970	203,029	175,804

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.

[2]Approximately 60 per cent of lime produced is high calcium and 40 percent high magnesium.

● The Huron Portland Cement Company's newest self-unloading bulk cement carrier, the M/V "Paul H. Townsend" at the firm's Thunder Bay Quarries dock.

Huron's M/V "Townsend" Christened at Detroit Rites

Christening of the motor vessel *Paul H. Townsend*, newest of the Huron Portland Cement Company's Great Lakes bulk carriers, took place on April 30 at Detroit, Mich., as a part of festivities honoring the firm's president and secretary, Paul H. Townsend.

The 339-ft. 1,700-hp. diesel craft, christened by Mrs. Richard E. White, daughter of Mr. and Mrs. Townsend, now joins her sister ships, the *John W. Boardman*, the *S. T. Crapo*, and the *Samuel Mitchell*. All have self-unloading facilities. The *Townsend* will engage exclusively in transporting bulk cement from the world's largest cement mill at Alpena to Huron's auxiliary distributing plants.

Speakers at the Detroit ceremonies were Emory M. Ford, chairman of the boards of the Huron Portland Cement Company and its subsidiary, the Huron Transportation Company, Mr. Townsend, and Charles M. Adams, superintendent of plants and vessels for both companies.

Speed of the *Townsend* is 14 m.p.h.; gross tonnage is 3,580 tons; and load draft is nearly 24 ft. In addition to her 1,700 hp. diesel engine for main propulsion, the vessel is equipped with two 250-kw. diesel generators for auxiliary power and a 1,000-kw. diesel generator to operate the self-unloading machinery.

Unlike most Great Lakes ships, the *Townsend's* wheelhouse and quarters are located aft. She is equipped with radar, television, radio, automatic pilot, ship-to-shore telephone, radio direction finder, and gyro-compass. The unloading machinery is remotely and automatically controlled by an interlocking electrical installation. She can be unloaded in approximately ten hours by means of the Fuller-Huron Air-Slide; loading time is about five hours.

Net income of the Keystone Portland Cement Company, Philadelphia, Pa., for 1952 was $748,406, equal to $5.49 a common share, on net sales of $5,945,851, showing a decline from the previous year's figures. In 1951 net income was $839,592, or $6.07 per share, on net sales of $6,131,959.

Net income of the Bessemer Limestone and Cement Company, Youngstown, Ohio, dipped from $1,305,614 ($4.30 per share) in 1951 to $1,111,540 ($3.65 a share) in 1952. Sales declined from $7,189,840 in 1951 to $6,932,741.

Pioneer Engineering Board Names Ellertson President

Oscar J. Ellertson has been elected president of Pioneer Engineering Works, Inc., Minneapolis, Minn., succeeding Melvin Ovestrud, who has retired. Mr. Ellertson was also elected to the board of directors.

In becoming president, Mr. Ellertson heads the firm his father, E. E. Ellertson, helped to found and head in 1928 after the purchase of the crushing plant business from the Caterpillar Tractor Company. Caterpillar had bought it from the Russell Grader Manufacturing Company.

Mr. Ellertson has held numerous positions with Pioneer. He joined the emplay of Russell Grader in 1923 and continued with that firm until 1928. When Pioneer was organized, he became purchasing agent for the latter company. In 1932 he entered the sales department,

Oscar J. Ellertson

holding positions successively as salesman, advertising manager, assistant sales manager, and export manager. During this period he was also assistant secretary and assistant treasurer.

In 1950 the stock of Pioneer was purchased almost wholly by Poor & Company, Chicago, and Pioneer became a subsidiary of the latter. At that time Mr. Ellertson was elected treasurer of Pioneer, and in 1951 he was elected vice-president. Since 1952 he has been in charge of the company's production.

Melvin Ovestrud, the retiring president, will continue with the company as engineering consultant. His services date back to 1928, when he was chief engineer. He became successively vice-president and works manager, first vice-president, and finally president in 1951. His contributions through new designs and progressive ideas of building heavy construction equipment are many. He is currently on the board of directors of the Construction Industry Manufacturers Association and is an active participant in the American Road Builders Association. He is a member of the American Society of Mechanical Engineers and of the Twin City Engineers' Club.

Re-elected first vice-president is K. E. Brunsdale, brother of the governor of North Dakota. Mr. Brunsdale has been first vice-president since 1951. Prior to that time he had served as vice-president, secretary-treasurer, sales manager, advertising manager, and credit manager.

Also re-elected a vice-president was Carl R. Rolf, who since 1950 has been vice-president and sales manager. Mr. Rolf's services began as a salesman with Russell Grader Manufacturing Company. When Pioneer was organized, he joined the sales force and has been connected with the sales end of the business ever since.

Other officers re-eelcted include A. J. Frystak (Chicago), secretary; Roy W. Sergeant (Chicago), treasurer and assistant secretary; and Roy L. Slama, assistant secretary and assistant treasurer.

S. African Cement Makers Visiting American Plants Inspect A.-C. Facilities

Visiting cement manufacturers from Africa recently inspected the Milwaukee, Wis., plant of the Allis-Chalmers Manufacturing Company, makers of equipment for the cement industry. They reported that despite South Africa's race problem their country has a bright economic future.

The group included the following: C. N. Targett, general manager, Premier Portland Cement Company, Ltd.; B. G. Twycross, managing director, Pretoria Portland Cement Company, Ltd.; Jay C. Warner, resident manager for Allis-Chalmers in South Africa; and H. A. Byland, manager, Anglo-Alpha Cement, Ltd.

The Waylite Company, Chicago, Ill., has signed a contract with the United States Steel Company to build a new expanded slag lightweight aggregate plant at Youngstown, Ohio.

J.A. Holmes Safety Awards Announced by Mines Bureau

Heroes of the nation's mineral industries have been honored by the Joseph A. Holmes Safety Association—nine with Medals of Honor for assuming grave risks in saving the lives of their fellow workmen, and two with Certificates of Honor for displaying skill in using modern life-saving methods in an emergency. The awards, one of them posthumous, were announced by J. J. Forbes, director of the Bureau of Mines and president of the association. The association was founded in 1916 to commemorate and further the work of the late Dr. Joseph Austin Holmes, first director of the Bureau of Mines.

A total of 527 Certificate of Honor awards was made for exceptional safety records and outstanding success in supervisory work. These included certificates for 270 individuals, 94 coal mines and companies, 78 metal mines and companies, 58 petroleum plants and companies, 18 quarries and companies, and 8 nonmetallic mines and companies. The association re-elected R. G. Warneke, Bureau of Mines, as secretary.

Certificates of Honor were awarded to the following:

Region III—California and Nevada. Crestmore mine, Riverside Cement Company, Crestmore, Calif. (Nonmetallic mines and mining companies)

Region IV—Wyoming, Utah, Colorado, Arizona, New Mexico. Western Gypsum Company, Certain-teed Products Corporation, Sigurd, Utah; Portland plant, Portland, Colo., and Boettcher plant, Boettcher, Colo., both of the Ideal Cement Company. (Quarries and companies)

Mines and refinery, Potash Company of America, Carlsbad, N. M.; mine, United States Potash Company, Carlsbad, N. M. (Nonmetallic mines and mining companies)

Region V—North Dakota, South Dakota, Nebraska, Iowa, Wisconsin, Minnesota, Michigan. **Arthur H. Wilson,** Alpena, Mich., for working in the quarry of the Huron Portland Cement Company for 44 years without a lost-time accident. (Individuals)

Inland Lime and Stone Company Division, Inland Steel Company, Manistique, Mich.; Fort Dodge quarry, National Gypsum Company, Fort Dodge, Iowa; and National City quarry, National Gypsum Company, National City, Mich. (Quarries and companies)

Region VI—Texas, Oklahoma, Kansas, Missouri, Arkansas, Louisiana. **Gus Meifert,** Missouri Portland Cement Company, St. Louis, Mo., for working around a sand plant and cement plant for 46 years without a lost-time accident. (Individuals)

Texas Gulf Sulphur Company, Newgulf, Tex. (Nonmetallic mines and mining companies)

Region VII—Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, Florida. Plant No. 2 and limestone quarry, Pennsylvania-Dixie Cement Corporation, Clinchfield, Ga.; No. 5 limestone mine, Tennessee Coal and Iron Division, United States Steel Corporation, Bessemer, Ala. (Quarries and companies)

American Cyanamid Company and Sydney mine of American Cyanamid Company, Brewster, Fla.; Akin plant, Tennessee Valley Authority, Columbia, Tenn.; Dolomite mine No. 3, Woodward Iron Company, Pleasant Grove, Ala. (Nonmetallic mines and mining companies)

Region VIII—Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Ohio, Illinois, Indiana, Kentucky, Virginia, West Virginia. **Domenic Albertazzi,** United States Gypsum Company, Farnams, Mass., for working as a quarry driller, blaster, and stone sorter for 47 years without a lost-time accident; **Angelo and Mariano Calderoni,** Michigan Limestone Division, U. S. Steel Corporation, Boyers, Pa., for working in an underground limestone mine for 40 years without a lost-time accident; **Lloyd E. Hooks,** chief electrician, Michigan Limestone Division, Boyers, Pa., for supervising a crew in an electrical underground repair and maintenance shop without a lost-time accident from October 1, 1928, to February 28, 1953, a total of 475,280 man-hours; **Antonio C. Isacco,** section foreman, Michigan Limestone Division, Forestville, Pa., for supervising an underground crew without a lost-time accident from September 25, 1939, to February 28, 1953, a total of 411,850 man-hours; **Lee L. Kohlmeyer,** assistant mine foreman, Michigan Limestone Division, Boyers, Pa., for having no lost-time accidents to men under his supervision in an underground limestone mine from May 17, 1938, to February 28, 1953, a total of 311,112 man-hours; **Salvadore Macaluso,** Bessemer Limestone and Cement Company, Bessemer, Pa., for supervising a crew of 30 men in packing and shipping approximately 17,000,000 bbl. of cement from January 1, 1942, to January 1, 1953, a total of 771,064 man-hours, without a lost-time accident; **Frank D. Obidean,** Michigan Limestone Division, Boyers, Pa., for working in an underground limestone mine for 41 years without a lost-time accident; **Veneil A. Pearce,** section foreman, Michigan Limestone Division, West Sunbury, Pa., for having no lost-time accidents to men under his supervision in an underground limestone mine from September 18, 1939, to February 28, 1953, a total of 488,278 man-hours; **Guiseppe Pezzuti,** mine foreman, Michigan Limestone Division, East Brady, Pa., for supervising operation of an underground limestone mine from November 14, 1950, to February 28, 1953, a total of 727,294 man-hours, without a lost-time accident; **Clifton G. Laughman,** night plant foreman, Bethlehem Quarry Company, Hanover, Pa., for having no lost-time accidents to the men under his supervision from January 1, 1952, to December 31, 1952, a total of 375,000 man-hours; **John Kawaske,** superintendent, The Callanan Road Improvement Company, South Bethlehem, N. Y., for supervising two stone quarries without a lost-time accident for a total of 615,812 man-hours; **Roy L. Barnhart,** shop foreman, Bethlehem Quarry Co., Hanover, Pa., for having no lost-time accidents to men under his supervision from January 1, 1936, to December 31, 1952, a total of 366,000 man-hours; **Adolphus E. H. Frock,** day quarry foreman, Bethlehem Quarry Co., Hanover, Pa., for having no lost-time accidents to the men under his supervision from September 1, 1945, to December 31, 1952, a total of 440,000 man-hours. (Individuals)

Bessemer cement plant and quarry, Bessemer Limestone and Cement Company, Bessemer, Pa.; Buffalo Creek plant, Michigan Limestone Division, U. S. Steel Corp., Worthington, Pa.; Annandale mine, Michigan Limestone Division, Boyers, Pa.; Hillsville quarry, Michigan Limestone Division, Hillsville, Pa.; Kaylor mine, Michigan Limestone Division, East Brady, Pa.; Moler quarry, Michigan Limestone Division, Millville, W. Va.; Plant No. 9, Pennsylvania-Dixie Cement Corp., West Winfield, Pa.; and Hanover quarry, Bethlehem Quarry Co., Hanover, Pa. (Quarries and companies)

Gypsum and Gypsum Products 4th Quarter and 1952 Summary

Domestic mine production of crude gypsum during the fourth quarter of 1952, as reported to the U.S. Bureau of Mines, was 2,032,964 short tons—a fraction of 1 percent more than in the fourth quarter of 1951. Imports were 17 percent lower than in the same period of 1951, so that the apparent crude supply was 5 percent less than in the fourth quarter, 1951. Production of calcined gypsum was 2 percent higher than during the same quarter of the previous year.

Fourth-quarter gains and losses among the gypsum products were irregular. Marked percentage gains were recorded by the following: sanded plasters, 58; wallboard and laminated board, 21; Keene's cement, 14; and dental and orthopedic plasters, 10 percent. Principal percentage decreases were as follows: mixing-plant plasters, 23; agricultural gypsum, 21; prepared finishes, 21; and miscellaneous industrial products, 17.

Cumulative January-December totals show that nearly all gypsum products were used in lower quantity in 1952 than in 1951. The only appreciable gain was registered by sanded plasters, while the following products showed sizable losses: fillers and unclassified uncalcined products, tile and miscellaneous prefabricated products, mixing-plant plasters, plate-glass and terra-cotta plasters, prepared finish plasters, and lath.

Kennedy, K.V.S. President, Honored on 90th Birthday By Company Associates

More than 250 key members and officials of the Kennedy-Van Saun Manufacturing & Engineering Corporation, together with friends and associates from all parts of the country, honored

● Mr. and Mrs. Kennedy, and Judge Brown, a guest speaker.

Joseph E. Kennedy, president and founder of the organization, at a dinner party held recently in Danville, Pa., in celebration of Mr. Kennedy's 90th birthday.

In a brief address, Mr. Kennedy praised the firm's employees on their loyalty and production accomplishments and presented 25-year service pins to five members of the organization who joined the more than 75 members of the K.V.S. 25-year club. Mr. Kennedy expressed high optimism as to the company's outlook for the months ahead and disclosed the recent closing of a large cement plant contract in South America, involving the sale of K.V.S. equipment worth more than $2,000,000.

International Talc Company Begins 61st Year in Business

International Talc Company officials at Gouverneur, N. Y., recently marked the 60th anniversary of the founding of this concern. The present firm, which was originally called the International Pulp Company, was formed in 1893 from four independent talc companies.

Together with the W. H. Loomis Talc Company (formed in 1919) and the Gouverneur Talc Company (started in 1948), International produces one-third of the nation's talc and 11 percent of the world's output. These three concerns have a combined capacity of 150,000 tons of ground talc annually and employ 400 persons.

Calaveras Cement Scores In Production, Sales Records

According to H. C. Maginn, executive vice-president of the Calaveras Cement Company, consolidated sales of the firm for the first quarter of 1953 amounted to $1,517,868, a 35 percent increase over sales in the like period last year.

Mr. Maginn stated that April shipments were the largest for any month in the company's history, and that the first four months of 1953 were "considerably ahead of any like period.

Koehring Southern Company Holds Six-Day Open House

TO CELEBRATE the opening of its new manufacturing plant at Chattanooga, Tenn., the Koehring Southern Company held a six-day open house from April 17 through April 22 at Chattanooga. Each day was devoted to a special group of guests. These included local civic and industrial groups, publishers, employees, the general public, equipment users, and Koehring products distributors.

On hand, as hosts for the event, were some 30 officers, directors, and members of the sales organization from the parent Koehring Company of Milwaukee, Wis., and its other subsidiary companies—the C. S. Johnson Company of Champaign, Ill., the Kwik-Mix Company of Port Washington, Wis., and the Parsons Company of Newton, Iowa.

The program included guided tours through the modern 800- by 120-ft. factory, located on Manufacturers Road in North Chattanooga. A special equipment exhibit at the plant consisted of approximately $220,000 worth of Koehring and subsidiary products, brought to Chattanooga especially for the occasion. Featured among the 25 pieces of equipment were the latest models of excavators, cranes, dumptor, pavers, mudjacks, trenchers, mixers, batchers, cement chargers, clamshell and concrete buckets, power wheelbarrows, and fork lifts. Visitors also had a preview showing of two new models of Koehring shovels and cranes, built at the Chattanooga plant. Company officials report that this represents the first excavator line manufactured in the South by Koehring.

To launch the six-day affair, Koehring Southern held a special reception and dinner on April 17 for local public officials, civic, business and industrial leaders, and publishers and special representatives of the technical trade press. Chattanooga's Mayor P. R. Olgiati officially welcomed Koehring Southern to the community. In his response, J. R. Steelman, Koehring president, said, "By your interest and your presence, you assure us that we are a part of your community. Your visit today to our plant and meeting with us this evening is heart-warming assurance of your acceptance of us."

April 18 was "family day," an opportunity for the families and friends of its plant workers and for the general public to tour the plant and inspect the equipment display.

On April 19 Koehring Southern received a special group of contractors and other users of construction and materials-handling equipment.

Two days were set aside for a combination open house and sales meeting for Koehring products distributors. This event attracted an attendance of approximately 175 persons.

● Left: Koehring products distributors — 175 of them — from the United States, Canada, Mexico, and Puerto Rico attended the Koehring Southern Company open house at Chattanooga, Tenn.

● Below: Some of the Kwik-Mix, Parsons, and Johnson units exhibited at the open house.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

ALTHOUGH not so designated, the June, 1923, issue of PIT AND QUARRY was predominantly a lime number, as the May issue now is. In it was a variety of technical and operating articles and the program of the coming convention of the National Lime Association. This meeting was to be held from June 13 to 15, 1923, in New York City. On the program were Charles Warner (The Warner Company), president of the association; Dr. Oliver J. Bowles, mineral technologist, U. S. Bureau of Mines; Victor J. Azbe, combustion engineer; and various members of the association staff.

A feature article was *Utilization of Waste Rock at Lime Plants*, by Bowles. In it he described the many current uses for rock too small for vertical kilns, such as crushed stone, agstone, etc. He also described the trend, then beginning, to using such stone in rotary lime kilns. Another article by Dr. Bowles was entitled *Exercise of Judgment in Choice of Quarry Equipment*. He gave much sound advice to operators, especially those going from hand to power shovel loading in their quarries. In such conversions he pointed out that primary crushers used for hand-loaded rock usually are not large enough to handle shovel rock. A news item in this issue also told of the recent appointment of Dr. Bowles as superintendent of the new U. S. Bureau of Mines mining experiment station to be established at Rutgers College, New Brunswick, N. J. This station was to specialize in problems involved in the production and utilization of the various nonmetallic minerals.

The use of powdered coal for firing vertical lime kilns was suggested in an article by F. O. Cheney, of the Cheney Lime Company, Allgood, Ala. He pointed out the many advantages and disadvantages of this method, which he said could be the greatest step forward in the lime industry since hydration was developed. Pointing out the advances being made in pulverized coal firing of rotary lime kilns, Mr. Cheney urged some producers to try out this method for the benefit of the entire industry. (We do not know how many producers actually tried this method and whether or not any of them had this idea before Mr. Cheney, but there is one producer in this country who has used this method for many years and is still using it successfully.)

Another article in that issue described an unusual method of publicizing lime. The Torrance Lime & Fertilizer Company of Los Angeles displayed in the window of a bank on a main business corner a unique collection of fossils found in its quarry in the Palos Verdes Hills. Also described was the lime sales follow-up of the Luckey Lime & Supply Company, Luckey, Ohio. It was said that with this system those responsible for selling a company's lime need never be in doubt on any point that will have a bearing on the sales success.

Lime plant operating articles were not overlooked in this issue. There was a complete description, with photos and drawings of the new and modern hydrating plant of the Mississippi Lime & Materials Company, at Hannibal, Mo., to be operated under the name of the Bluff City Lime Company. This was an outstanding operation in its day and was to process lime from an existing calcining operation until a new and modern crushing and calcining operation could be completed later in the year.

Another article emphasized the fireproof features of the new plant of the Williams Lime Manufacturing Company at Knoxville, Tenn. This plant was one of several in this area which secured their raw material from the waste piles of dimension marble quarries.

The Utica Lime Company had an old shaft kiln lime plant at Utica near Jefferson, Ind., which had not been operated for several years. The waste lime over the years had been dumped in a waste pile which had grown to many thousands of tons. It was decided to salvage this material for liming soils and then eventually to go back into the lime business. The equipment used to prepare the liming material consisted primarily of a shovel, a rotary drier, and a pulverizer.

In an effort to help lime producers who had lost most of their construction market, PIT AND QUARRY sent out questionnaires asking producers' opinions of the possibilities for the direct sale of wet lime mortar as aged lime putty, a practice being followed successfully in a few areas. A number of replies published in this issue indicated a lack of interest except on the part of producers located near large market areas.

The cement industry was again in the news with the following: a new $4,000,000 plant proposed for Exeter, Calif.; the purchase by the Marquette Cement Manufacturing Company of the Cape Girardeau (Mo.) Portland Cement Company for $2,000,000; the completion by the Lehigh Portland Cement Company of its new plant near Birmingham, Ala.; the announcement that a new $1,500,000 plant would be build by the Yosemite Cement Company near Merced, Calif.; the acquisition by the Toronto Cement Corporation, Ltd., of the 1500-bbl. new plant of the Ontario Cement Company, Ltd., at Beachville, Ont., which was near completion.

Marlett Named Vice-President Of Great Lakes Carbon Corp.

Election of De Otis L. Marlett as vice-president of Great Lakes Carbon Corporation and his appointment as general manager of the Dicalite and Perlite Divisions was announced by Walter Gramm, senior vice-president of Great Lakes Carbon Corporation.

Mr. Marlett came to Great Lakes Carbon Corporation early in 1952, from the Bonneville Power Administration, where he had served for almost 12 years. For his service there as assistant administrator for seven years, and for his activity in organizing the Defense Electric Power Administration, he was awarded the Distinguished Service Medal of the Department of the Interior.

De Otis L. Marlett

Prior to his government service, Mr. Marlett was employed by the Illinois Commerce Commission.

In November, 1952, Mr. Marlett was appointed assistant general manager of two Great Lakes divisions. The Dicalite Division produces processed diatomaceous earth for making diatomite filteraids and fillers. The Perlite Division mines and produces perlite ores, which are processed in franchised plants throughout the country for the production of lightweight concrete and plaster aggregates.

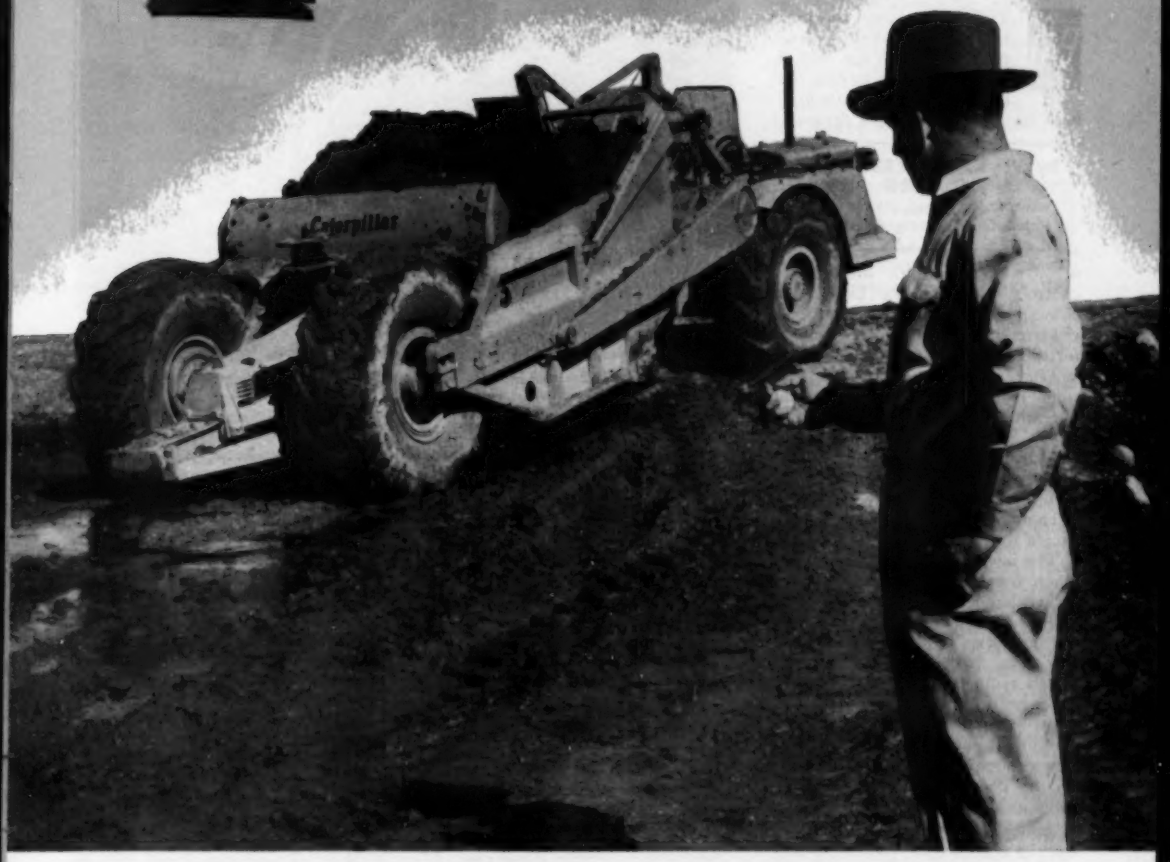
Survey of Alaskan Minerals Reveals Available Nonmetals

A U. S. Bureau of Mines survey discloses that Alaska nonmetallic minerals are available in sufficient quantities to provide building materials for construction in the Alaska Railroad belt.

Findings indicate that raw materials for the construction of brick products are plentiful in the form of clay from the Anchorage area, as fire clay at Sheep Mountain, and as shale near Healy.

A free copy of Report of Investigations 4932, *Nonmetallic Deposits Accessible to the Alaska Railroad as Possible Sources of Raw Materials for the Construction Industry*, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

YOU hold the watch!



If you want to know whether you're getting the most out of your earthmoving rigs, here's how to find out.

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**NAME THE DATE...
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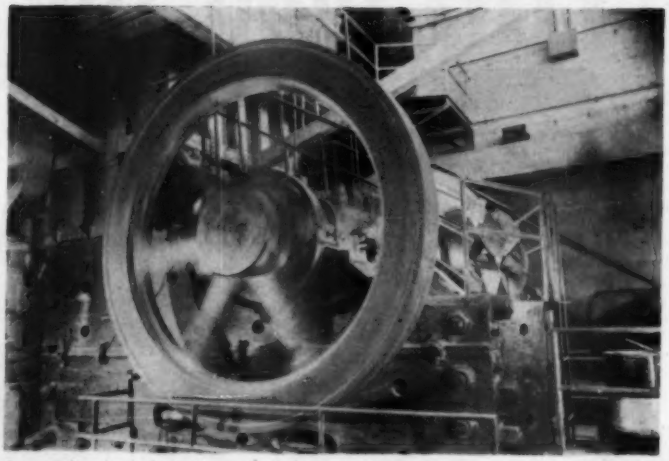
Electrical Control Of Gyratory Crushers

Co-ordination is the key to trouble-free operation of today's heavy machines.

TODAY'S large machines frequently cause voltage problems which not only affect their own motors and controls but also create problems for other equipment operating

By W. R. PATTERSON and R. GERG
Engineers
Allis-Chalmers Mfg. Company



Jaw crusher load fluctuations are less severe than gyratory crusher load fluctuations because of the heavy flywheel mounted on a jaw crusher.

on the same feeder. Motors and controls operating on heavy machines, such as large rock and ore crushers, must be designed especially for their application.

After blasting has removed the stone from the earth, the crushing operation is generally divided into several stages which are usually referred to as the primary, secondary, tertiary, etc. The crushers used may be of either the jaw or gyratory type. A comparison of the various types is shown in the accompanying table.

The jaw crusher is usually selected when the feed opening required is rather large, but the required tonnage is not. If the jaw crusher were not equipped with large flywheels having a high inertia effect, the power requirements would fluctuate excessively. As the jaw opens to allow stone to drop further into the crushing chamber, relatively little power is required. During this phase on the Blake type jaw crusher, the pitman and eccentric are moving from top dead center (T.D.C.) to bottom dead center (B.D.C.). (See Figure 1.)

As the pitman and eccentric begin moving from bottom dead center toward top dead center, the jaw begins its forward movement and does its crushing during this half cycle. During the first 90 degrees of this half cycle, very little crushing is done because for the most part the jaw is "pulsing" on the stone, or positioning it and getting a firm grip on it. It is during the last 90 degrees of this half cycle that most of the work of crushing is done. The easily broken pieces are crushed quickly, and as the eccentric approaches a position approximately 10-15 degrees ahead of T.D.C., the jaw has solidly gripped and is breaking the larger and harder pieces. Because of the geometry of the toggles, pitman, eccentric and jaw, an exceptionally high force can be transmitted to the jaw and consequently to the stone.

Table I

Type Crusher	Load Fluctuations	Dust	Normally Overloads at Times	Average % Peak Load	D.C. Operating Magnet Recommended on Controls	Instantaneous Overload Relay Required
Primary Gyratory	Severe	yes	yes	150-200	yes	yes
Secondary Gyratory (no Fines)	Moderately Severe	yes	yes	100-150	yes	yes
Tertiary Gyratory	Steadier	yes	no	100-115	yes	no
Jaw Primary	Similar to Gyratory Secondary (due to flywheel)	yes	yes	100-200	yes	[illegible]

However, this is also the point at which the highest force is required. The jaw has moved to where it is working on the greatest quantity of stone as well as the hardest pieces of stone. It can be seen that the most likely place for the jaw to stop is at this point. To overcome this, the greatest amount of torque must be transmitted at this time.

Flywheels are attached to the eccentric shaft. They have a high inertia effect so that the high torque requirements at the end of the forward movement of the jaw can be met without having to install an excessively large motor to carry through the peak torque requirements. What actually happens is that during this peak torque requirement the flywheel transmits energy to the jaw, and during the rest of the crushing cycle the motor causes the flywheel to regain its speed and thus store energy in the flywheel for the next peak torque demand. The power demand on the motor is thereby reduced, resulting in more even power requirements and permitting the use of a smaller motor.

Gyratory crushers are usually selected when both large feed opening and large tonnage are required. The feed opening is usually determined by the shovel size. A 2- or 2½-cu. yd. shovel would probably require a crusher with a 42-in. feed opening, and the plant tonnage requirements

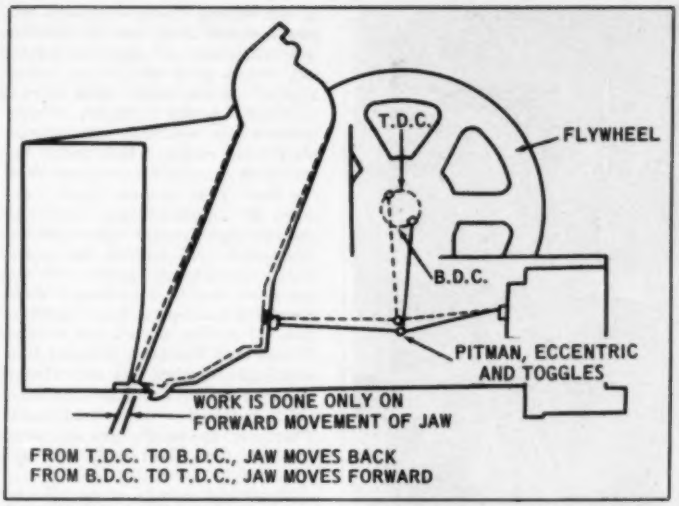

T.D.C.
FLYWHEEL
B.D.C.
PITMAN, ECCENTRIC AND TOGGLES
WORK IS DONE ONLY ON FORWARD MOVEMENT OF JAW
FROM T.D.C. TO B.D.C., JAW MOVES BACK
FROM B.D.C. TO T.D.C., JAW MOVES FORWARD

Fig. 1. Relationship between pitman, eccentric, toggles, and jaw.

would probably be 300-400 t.p.h. In a 400-t.p.h. plant the primary crusher might be a unit weighing close to a quarter million pounds. Out of this weight, the mainshaft assembly, which includes the shaft and crushing head, together with the eccentric and other rotating parts, might weigh in the neighborhood of 50,000 to 60,000 pounds. Setting these parts in motion requires a high starting torque to overcome a considerable amount of inertia and friction.

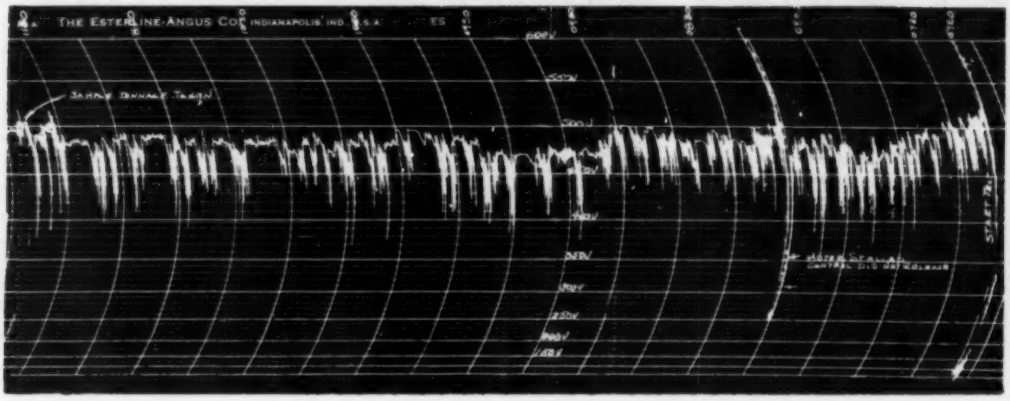
The torque required to overcome the inertia effect of the rotating parts will remain the same during all types of weather, but it does vary primarily with the time required to bring the parts up to speed.

The frictional load may vary considerably. Primary crushers for the most part are not housed in warm buildings. Usually they are placed outside in a quarry or in a building which is not heated. In many cases the primary crusher may be operated in weather as low as 10-15 deg. below zero F. At such temperatures the viscosity of the oil is at or near the pour point. In crushers having an integral lubrication system the only way to alleviate this condition and reduce the high friction due to cold oil is to house it in a warm building, build a fire under it, or use a very light oil. As the weather and the crusher warm up during the day, a very light oil may prove too thin for good operation. In more modern crushers having an external lubrication system, an immersion heater in the oil tank will relieve somewhat the high starting and running torque required to overcome the friction of the cold, viscous oil. This starting torque will, under the conditions mentioned, cause a power demand high enough to stall the motor. Even after the crusher has been started and is running idle, the power demand may exceed the rated horsepower of the motor for a short time. However, when the crusher has warmed up, the power demand running idle may be only 30-40 hp. instead of being over the motor full load rating of possibly 250 hp.

Fig. 2. Wide load fluctuations cause the voltage dips shown in this voltmeter chart for a 42-in. primary gyratory crusher operating on granite feed under normal conditions.

As far as load demand is concerned, the gyratory crusher as a general rule has a more continuous load demand. If the primary gyratory crusher were continuously supplied with evenly-graded material, the power requirement during one complete rveolution of the eccentric would be fairly level, as compared to a jaw crusher. This would be true because the gyratory crusher crushes continuously throughout each revolution of the eccentric. There would be no periods of idle operation, as there would be if the same feed were crushed in a jaw crusher.

It may seem that with a more continuous power demand, flywheels are not as effective as when there is a period of idle operation during the crushing cycle. In the gyratory crusher the greatest fluctuations in power demands are caused when a load is dumped into the crusher which contains both fines and large stones. Usually a load will vary between 5 and 20 tons. The finer stone, which drops into the bottom of the crushing chamber, requires from 60 to 90 percent of the motor horsepower output. In addition, there may be in the crushing chamber a number of pieces ranging in size from 30 to 40 in. in diameter. When the head first begins to nip or crush these pieces and at the same time crush the finer stone, peak mo-



Primary crusher output is screened prior to secondary crushing. This process reduces secondary load fluctuations. Top center is the primary crusher and below are two feed openings for secondary crushers. In between are two single-deck screens.

mentary loads of 150 to 200 percent of the motor horsepower may be experienced, even though the average horsepower requirement for crushing the entire load of stone may be 50 to 75 percent of the motor rating. When running idle or lightly loaded, which is normal between loads, the crusher may draw only 10 to 15 percent of the motor rating.

These wide load fluctuations make it difficult to provide adequate overload protection. To generalize on it, we may say that the power requirements for crushers varies considerably, depending upon the hardness of the stone, the feed analysis, and the reduction ratio between the feed and the product. (Refer to table.)

Specially designed motors are available for crusher operations. They have a high starting torque and adequate running torque to handle the maximum anticipated peak loads during normal operations. Amperages greater than full load motor rating on starting, cold idle running, and peak loads can usually be handled by the motor. Starting overload amperages usually last only a few seconds, while cold idle running overloads last longer. Several minutes may pass before the cold oil is warmed to the point where the power demand goes below the full load rating of the motor. As the air is quite cold, there is little danger of burning out the motor. A standard control not designed for this application may unnecessarily shut the crusher down under these severe starting conditions. The control should be one capable of handling the severe starting conditions up to the point where the motor insulation approaches a dangerous temperature level, at which time it will drop the motor from the line to protect it from a costly burn-out.

In the majority of applications a wound-rotor motor is used for driving primary gyratory crushers. The wound-rotor permits controlled acceleration of the crusher and limits the starting current to a value that minimizes the voltage dip. It also provides adequate starting torque to accelerate the crusher smoothly under most conditions.

The rotor leads are connected to a resistance bank, and acceleration of the motor is accomplished by progressively shunting out this resistance until the rotor terminals are shorted. The shunting of the secondary resistor bank may be done automatically or by means of a hand-operated drum switch.

Low Voltage Can Be Costly

A widely fluctuating load causes the voltage dips shown in the recording voltmeter chart in Figure 2, and often results in poor voltage regulation. As the torque required of the driving motor increases, the power drawn from the distribution system increases and, generally speaking, results in lower voltage being applied to the motor and starter terminals. A dip in supply voltage to the motor results in reduced motor driving torque, which means an increased demand for amperes from the line. This, in turn, further reduces the supply voltage. Low voltage may have several serious results. The motor may stall or the motor starter contacts may freeze, and the net result may be a prolonged shutdown and consequent loss in production. If stalling occurs just after a 20-ton load has been dumped into a primary crusher, up to 8 hours may be required to remove the stone either by hand or by a small hoist. This loss of production in some crushed stone plants may cost upwards of $5,000 a day.

Since low voltage is one of the most serious problems encountered by the operators of a crushing plant, a study of the co-ordinated design of the utility distribution system and the distribution layout within the crusher plant should be the first step in the elimination of low-voltage problems. However, caution must be observed so that low-voltage conditions will not prevail in spite of this co-ordinated planning. One of the most common oversights is to plan the distribution system on the basis of rated horsepower loading. In many plants the primary gyratory crusher alone will equal 20-50 percent of the total loading. On a distribution system designed for rated load, a serious voltage dip may occur when a load is dumped into the primary crusher and its driving motor suddenly draws up to 200 percent of rated current.

Frequently, long low-voltage lines are run to heavy loads that are in remote parts of a plant. Since low-voltage lines constitute a major source of voltage troubles, power losses can be minimized by shortening these lines and bringing the high voltage lines to a load center substation installed near the load.

The majority of troubles occur on installations already located on long utility distribution systems where no corrective action can be taken. In these cases the motor control must be designed to operate properly under the existing voltage conditions.

Standard motor starters are equipped with an operating magnet. In general, these magnets are designed to pick up at 80 to 85 percent rated voltage and drop out at some value less than the pickup value.

During a peak load the voltage

may dip well below 85 percent rated value and cause the starter to drop out even though the peak may be momentary. These dips in voltage impose additional burden on the contacts. Contact pressure may be momentarily lowered at the instant high current is drawn. Peak load conditions almost always occur when a full load has just been dumped into the primary crusher. If the motor stalls under these conditions, it means that the crusher's full load must be emptied before production can be resumed. Standard a.-c. motor starters can be modified for these conditions.

Direct-current magnets energized from the a.-c. line through a dry type rectifier as a separate source of d.-c. will keep the drive motor starter contacts closed to a much lower value of voltage than will an a.-c. magnet. When direct current is available, it may be used instead of rectified a.-c. A d.-c. unit designed for the application will, if desired, keep power connected to the crusher drive motor at substantially lower dips than an a.-c. magnet. It is important to note here that when the voltage dips at the terminals of the primary crusher control, the same voltage dip is present at the terminals of all other motor controls. Therefore, unless these controls are also equipped with d.-c. magnets they will drop out and disconnect their motors from the line.

Dust Is a Troublemaker

Dust, an enemy of all electrical equipment, is common to all crusher installations. An accumulation of dust on the coils of the motor thick enough to increase the temperature of these windings 10 deg. C. would also reduce the life expectancy of the windings by approximately 50 percent. Dust in the bearings or guides

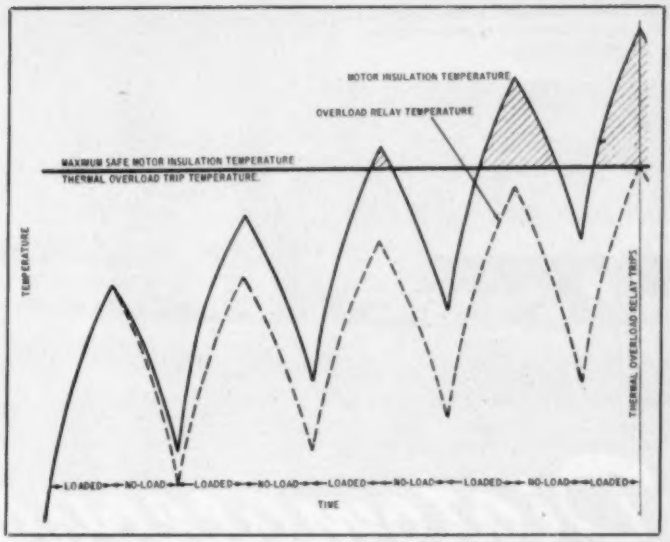


Fig. 3. Intermittently loaded motors may not be completely protected by standard thermal overload relays.

of the control equipment or on its contacts may cause faulty operation or complete failure.

There are three general types of control enclosures available for use around crushing operations. They are: NEMA 1A, semi-dust-tight; NEMA 4, water-tight; and NEMA 5, dust-tight.

NEMA 1A is an NEMA 1 enclosed with gaskets and affords some protection. NEMA 4 and NEMA 5 enclosures are very similar in construction, the major difference being the gaskets used to seal the enclosure. As a rule, NEMA 4 uses a rubber gasket and NEMA 5 uses a felt gasket. Experience has shown that the felt gasket may take a permanent set in a relatively short time. Rubber gaskets, however, have proved themselves capable of providing an effective seal over a long period of time. NEMA 4 is therefore recommended where rock dust or similar materials are handled. Caution should be observed on the part of the operators so that the enclosure cover is not inadvertently left open, thus defeating the purpose of the rubber gasket.

It is important that the main contact surfaces of starters be in a vertical plane. Contact surfaces in a horizontal plane not shielded from dust will collect dust at an accelerated rate and then may fail to perform their designated function.

Overload Protection

It may appear that no overload protection is necessary because during 90 percent of the crushing period of a primary gyratory crusher the motor is operating at 50 to 75 percent rated horsepower. Normally the winding temperatures are well below safe limits, and the momentary peak loads will not raise the temperature beyond safe limits. However, any protective device used is always placed where it is to handle the unusual conditions rather than the average. In a crushing plant a heavy load, a piece of tramp iron, faulty bearings, or any one of many other things may bring on the unusual condition that could result in burned-out motor windings if no overload protection is provided. For this reason all crusher motors must have adequate overload protection. The cost of adequate protection is very small when compared to the cost of lost production.

(*Continued on page* 98)

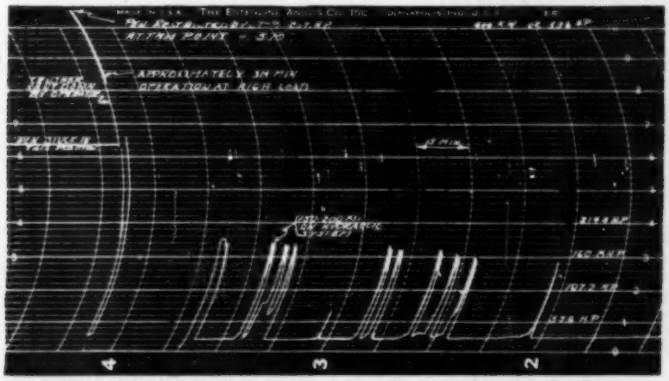


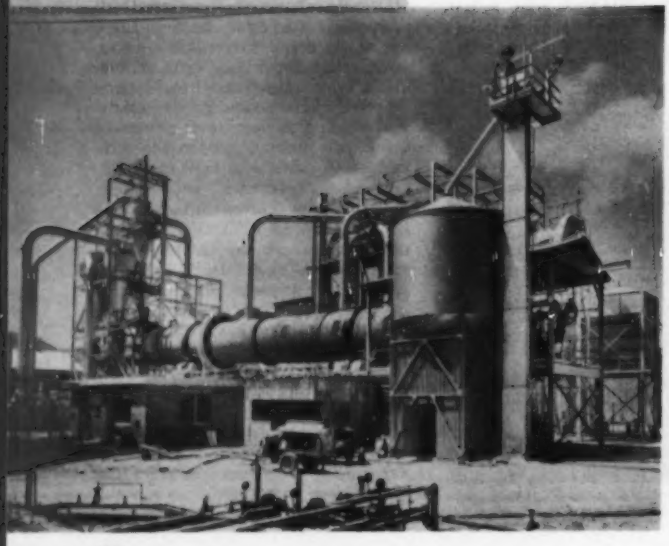
Fig. 4. The load chart shown here for a crusher overloaded to the point of stalling corresponds with the voltmeter chart shown in Figure 2.

The new plant of the Dicalite Division, Great Lakes Carbon Corporation, near Lompoc, Calif., devoted exclusively to processing diatomaceous silica.

Diatomaceous Earth

processed in GREAT LAKES CARBON CORPORATION'S Modern New Plant

By HARRY F. UTLEY



The 11- by 100-ft. rotary kiln. The feed storage bin is at the right; the building housing the control equipment at the left.

southern ON THE SPOT operator

THE GERMANS call it kieselguhr. In this country it is variously known as diatomaceous earth, diatomaceous silica, or diatomite. A recent article in a popular weekly magazine dubbed it "wonder earth"—which quite properly describes this nonmetallic mineral of wondrous origin and a multitude of uses.

Microscopic aquatic organisms, diatoms, have lived and died for geologic ages, as they still do today. Marine types exist in the salt-water oceans and seas, the fresh-water types in semi-stagnant lakes and streams.

An aerial view of the deposit and the loading station, showing how the tractors and scrapers work the material. Trucks and trailers which deliver to the plant are seen at the loading station in the foreground.

Marine diatoms flourished in southern California when, unlike today, it was the bottom of an ancient ocean, their skeletal remains settling to the bottom to form the huge present-day deposits of diatomaceous silica. Their formation is variously estimated at from 3,000,000 to 10,000,000 years in the past. Exposures of the material resemble chalk in whiteness and feel, but chemically there is a great difference. Unlike most living things, diatom skeletons are made up of silicon dioxide, a chemically-inert substance. Ordinary sand is of similar composition but, of course, of an entirely different structure.

The Dicalite Company, forerunner of the present Dicalite Division of the Great Lakes Carbon Corporation, was formed in 1929 after the acquisition of a diatomaceous-silica deposit in the Palos Verdes Hills near Walteria, about 25 miles from Los Angeles. Construction of a plant was completed in time to ship the first carload of material on April 1, 1930.

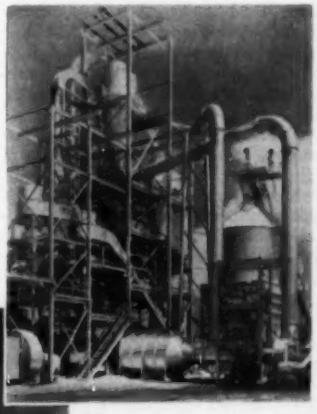
Although the time was not auspicious to launch a new business at the beginning of a great depression, the company grew to the extent that in April, 1936, the deposit and plant of the Oromite Company near Terrebonne, Oreg., was added to its holdings. The rotary kiln was about the only piece of equipment salvaged after a disastrous fire swept the Oromite plant in May, 1939. The plant was rebuilt with better equipment, newer processing methods were adopted, and operations were resumed about the middle of 1940.

Meanwhile, the demand for Dicalite products zoomed, particularly because World War II was having its effect. In November, 1944, the Dicalite Co. was purchased by Great Lakes Carbon Corp. At the same time Great Lakes Carbon also bought a large diatomite deposit and plant near Basalt, Nev.

The vast reserve of high-quality diatomite near Lompoc, Calif., which furnishes the material for operation of the company's new plant at Lompoc, was leased in May, 1942. During the war the Lompoc quarry was operated to supply additional crude for the Walteria plant, where the deposit was giving indications of depletion; and is still being trucked to Walteria for processing. Its prime function, however, is to supply the new Lompoc plant.

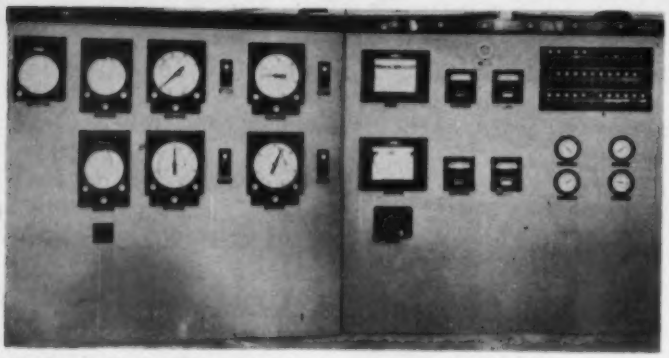
The operation at Lompoc went into production in April, 1952. Constructed for Great Lakes Carbon by Kaiser Engineers of Oakland, Calif., the new plant is of the "outdoor" type, the only processing part of the operation under roof being the packing department. Quarry and plant are 7 miles apart to permit the plant to be on the rail facilities of the Southern Pacific and close to the homes of the employees.

After removal of the overburden,



One of the furnaces and the fans (at ground level) which dry, mill, and convey the product to the air separators during processing.

Tractors both pull and push the scrapers which roll up 15 to 18 cu. yd. of diatomite, then deliver it to the loading station.



All controls and switches are centralized on one master panel-board, a portion of which is shown here. The equipment is housed in a separate concrete block building.

which runs from 2 to 15 ft. in thickness, the soft, snowy-white diatomite is exposed over a broad, level area in the deposit up in the hills. Excavating and transporting to the loading point is done on a high-capacity scale, Caterpillar and Allis-Chalmers tractors pushing DW-20 and Terra Cobra scrapers which roll up 15- to 18-cu yd. loads in a matter of seconds. Then, shifting into high gear, the loaded scrapers carry the material to the loading stockpiles, from which a three-drum hoist and drag scraper load the truck-trailer units which carry 25-ton cargos to the Lompoc plant.

The crude diatomite, usually carrying about 35 percent moisture, is bottom-dumped by the truck-trailers into two hoppers, each of 30-cu. yd. capacity, to supply the processing plant. Processing involves production of three general types of products to suit specific end uses: "natural", which is dried, milled, and air-classified; "calcined", which is dried, milled, burned, and air-classified; and "processed calcined" (or "white") which is dried, milled, subjected to high-temperature fluxing, and air-classified.

From the two supply hoppers, Stephens-Adamson 3- by 11-ft. pan-feeders regulate the flow of material to a belt-conveyor running to a Gruendler 3XC hammermill, where the raw diatomite is reduced to minus 2-in. pieces before being elevated to the crude-storage silo.

The enclosed silo has live-storage capacity for 100 tons, and recovery is by another Stephens-Adamson pan-feeder, facilitated by Syntron vibrators on the sloping sides of the bin bottom. This puts the material on another belt-conveyor, a fixed magnet over the belt pulling out any tramp iron which might inadvertently have got into the feed.

The conveyor discharges through an air-seal valve to the first stage of the drying process, a large-diameter pipeline. A special furnace heats the air drawn into the line, Rees blowers supplying the drying force. The blades of the blowers likewise act to mill the diatomaceous material while in transit. Any sand or other impurities are removed by closed-circuit air-separators; wet-type collectors are used to scrub the exhaust dust. After the diatomite is reduced to about 150-micron particle size and the moisture has been largely eliminated, it is subjected to further drying, milling, and air-classification before the natural product is ready for bagging. Or, if it is to be calcined, or process-calcined with soda-ash added as a flux, it is fed to the rotary kiln.

The Traylor all-welded kiln is refractory-brick lined, and is fired with a combination gas-oil burner. The kiln slopes ½ in. per ft. of length and turns variably from ½ to 2 r.p.m. depending upon the condition of the feed and the degree of calcination desired. Straight calcined material is pinkish-white in color after burning at 1800 to 2200 deg.F. The so-called process-calcined is a pure white finished product, being fluxed with soda ash, which is shipped in from the Death Valley region of California.

Throughout processing, all the products are subject to additional milling through the Rees fans in the pipeline circuits, with numerous air-separators in both open and closed circuits in the flow-sheet. There is also provision for precise blending at various stages of processing, and for taking control samples for testing in the laboratory.

The various products are bagged by five St. Regis packers using valve-type multiwall paper bags. The filled bags are palleted and handled by power-driven lift-trucks.

The new plant is a marvel of fireproof construction, as the accompanying pictures will attest. All controls are automatic, interlocked, and centralized in a concrete building. Safety was a paramount consideration in the design and erection of the new facilities. Besides numerous mechanical safeguards, operations are maintained practically dust-free to guard against inhalation by the workers of the siliceous dust generated during processing.

While the various Dicalite products are utilized to produce items

(*Continued on page 92*)

This view shows the two finished-product storage and blending bins (left), and the bag house (center). The complex system of hot-air piping, air separators, and fans does the drying, milling, and classification of the material.

Insurance and Quarrying

By HAROLD WILLIAMS

The article reprinted on this page was written by a Boston attorney who has had wide experience as counsel for Massachusetts operators of quarries and crushed stone plants in cases involving blasting claims. Readers of Pit and Quarry will be interested in his views on "extended coverage" clauses. Mr. Williams' article appeared in The Standard, an insurance weekly.

THE INCREASED demand for crushed stone for our roads, airports, and other construction has much enlarged the volume of quarrying. At the same time the growth of urban populations has brought residence districts closer to quarries. These factors have steadily increased the possibility of friction between stone producers and property owners in the vicinity. Improvement in operating methods has almost entirely eliminated the possibility of direct injury by throwing fragments of stone, and has reduced the problem to that of claims of indirect damage by vibration from blasting.

Vibration From Blasting The human body is extremely susceptible to vibration of the earth, even detecting a ground movement so microscopic as to be measured in units of a ten thousandth of an inch. Interference with the sense of balance is disturbing. If we cannot rely on the ground we stand on, what can we be sure of? Women are peculiarly sensitive to vibration. Then, too, they are more likely to be at home during the daylight hours, when blasting is done.

Vibration such as occurs in the ordinary course of daily life is often unnoticed or, if perceived, is disregarded because its cause is known; but the tremor from a blast, especially if accompanied by noise, is sometimes momentarily alarming to the average person lacking knowledge to evaluate it. It immediately gives rise to the apprehension that some harm may have been done to the house. Some hitherto unobserved crack in the plaster of ceiling or wall is quite innocently attributed to the blast, and a claim or suit against the quarry results.

A new field for liability insurance has now arisen, and a number of quarry companies seek to avoid this problem by turning it over to an insurance company. How far this is advantageous in the long run is not yet certain. There is always the tendency of the insurer to settle claims on the basis of danger rather than of merit. Settlement by a quarry which must go on doing the same thing in the same place tends to arouse more claims and suits to such extent that its continued existence in business may be threatened. Until insurance companies study the subject as the operating companies must, the permanent value of such insurance must remain an arguable question.

Extended Coverage Recently however, there has arisen a much more serious intrusion of the business of insurance into the quarrying industry. By an "extended coverage" clause property owners have been insured against damage by explosion, and this has been construed to include damage attributed to blasting. It is questionable whether the clause should be so liberally construed. Vibration emanating from a blast and felt at a distance from the impact which gave rise to it is quite different from an explosion as generally understood.

This distinction might well be recognized in the interpretation of the "extended coverage" clause as it is in the law, but insurance companies have given it the wider meaning, as insuring property owners from damage by vibration when it arises from blasting. Insurance companies can now be on both sides of the issue. Claims are settled as a matter of good business, and then "subrogation" suits on assigned claims are brought against the quarry company. This is something against which the whole crushed stone business should arise in arms, and insurance companies should take notice of this.

Precision Measurement The scientific study of vibrations within the range produced by commercial blasting has reached a stage where it is susceptible of accurate statement. Such vibrations can be and are measured quantitively and the earth or building displacement can be expressed in terms of mathematical exactitude. This knowledge can be and is being applied in blasting in all up-to-date and well conducted quarrying operation. Blasts can be and are so planned in advance that the amount of resulting vibration is kept within definite limits of safety and the results are verified afterward with precision.

The known amount of vibratory disturbance which all building materials can withstand lies at the base of all building codes; it is familiar to engineers, architects and building contractors generally. The United States Bureau of Mines has compiled tables for the guidance of quarry operators, showing the degree of displacement of the earth that may be expected from the discharge of definite amounts of explosives at definite distances, in various sorts of terrain. Quarry blasting can now be and is carried on with the same precision of measurement that makes possible all our present day mass production in manufacture.

Up to the present this has not been recognized generally in the insurance world, and it is time that it should be. It is no longer intelligent to be skeptical where the practical application of scientific study has established the facts. It is no longer ethical to insure against something that does not happen, and then try to recoup for payment of a groundless claim by holding a quarry responsible for something it didn't do.

Desirability Of Tests The situation presents a challenge to the good faith and honest intention of the insurance business. If the integrity of purpose or the soundness of the conclusions arrived at by such investigators as the United States Bureau of Mines, Dr. L. Don Leet of Harvard, Father Linehan of Weston College, Father Birkenhauer of John Carroll University, and numerous others be disputed or doubted, let an impartial test be made and the truth be ascertained one way or the other. The crushed stone industry would undoubtedly welcome the opportunity to assist in making such a demonstration possible.

Once the truth were known, if the insurance companies still felt that this form of defense was a mere fraud or subterfuge to avoid responsibility for damage caused, they could continue as they are now doing. But if it were made clear that present day quarrying can be and is conducted so as to prevent the possibility of damage to neighboring structures, let the insurance companies stop insuring against what does not happen. To do so would not only be consistent with good business ethics, but in the long run would be better, sounder business.

FAYETTE LIMESTONE CO.

Specializes in Agricultural Limestone

By KENNETH A. GUTSCHICK

another ON THE SPOT report

ONE OF the many quarrying concerns contributing considerably to Ohio's prominence in agricultural limestone production is the Fayette Limestone Company, which is located in the southwestern part of Fayette County, some nine miles southwest of Washington Court House, Ohio. The quarry is situated in the midst of an important livestock-producing area, and more than 50 percent of the firm's crushed stone production is in the form of agricultural limestone and thus is directed toward the farmer's market.

Although quarrying had been carried on intermittently at this particular site for the last 30 years or so, the Fayette Limestone Company was not formed until after World War II. The remains of an antiquated stone plant were torn down and an entirely new plant was built at the site.

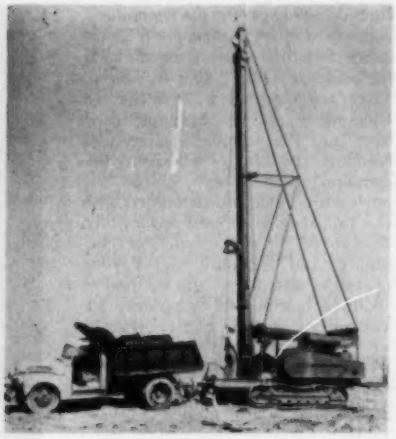
The present operation consists of three well-designed integrated units, including a primary crushing station located on the quarry floor, a stone-sizing plant, and an agstone plant located at ground level. The first two units were placed in operation in the fall of 1946 and the latter unit in 1951. The entire installation, with the exception of the hammermills, consists of Pioneer equipment. The plant has a total capacity of 200 t.p.h. and a maximum agstone capacity of 125 t.p.h., 40 percent of which is accounted for by the newer agstone plant. Generally the stone-sizing plant is used for agstone production only during the busy agstone season.

Several outstanding features are incorporated in the Fayette operation. First of all, the primary crusher (a jaw) is operated in closed circuit with a single-deck screen. The material is then conveyed directly to the stone-sizing plant *via* an inclined belt conveyor. Secondary and tertiary crushing is accomplished by means of four American Pulverizer hammermills, which also operate in closed circuit. The recently-constructed ag-

A general view of Fayette Limestone Company's plant near Washington Court House, Ohio. The stone-sizing plant is in right background and the agricultural limestone plant in the left foreground.

A view of the primary crushing closed-circuit operation on the quarry floor, showing the jaw crusher, the belt conveyor to the scalping screen, the oversize return belt conveyor to the apron feeder, and the belt conveyor to the stone-sizing plant.

A diesel-powered shovel, equipped with a 1½-cu. yd. bucket, is used for loading a 10-ton dump truck.



Primary blast holes, 7 in. in diameter, are drilled with this gasoline-powered well drill. Water for bailing is carried in a 500-gallon tank mounted on the dump truck.

stone plant, containing one of the high-speed hammermills, is an entirely automatic unit, featuring electric controls and interlocked switches. Another important feature is the exclusive use of sharped charges for secondary blasting. Finally, the firm has done an outstanding job in promoting the use of agricultural limestone and also the building of feed lots for livestock. Major services rendered include the testing of soil samples, free of charge, and the custom spreading of agstone and/or fertilizer.

The quarry is situated on an isolated knob, which rises 30 to 40 ft. above the surrounding farming country. The deposit, a part of the Monroe formation (upper Silurian), is a high-grade dolomitic limestone, averaging 96 percent in calcium carbonate-magnesium carbonate content. The formation is thin to medium bedded, bluish to light gray in color, extremely fine-grained, dense, hard, and rather unfossiliferous. At the present time a 50-ft. face is being worked; however, in the future, new levels may be developed in view of the fact that the high-quality limestone deposit is considerably thick in this locality. The overburden, consisting of glacial drift, averages 5 ft. in thickness; the bedrock surface exhibits excellent glacial straie.

Primary blast holes, spaced with 27-ft. centers and 19-ft. burden, are drilled by a newly-acquired Bucyrus-Erie 27 T well drill, which is powered by a Hercules gasoline engine. The holes, 7 in. in diameter are drilled 3 to 4 ft. below bottom. The drilling rate averages 8 f.p.h. Water used in the bailing operation is supplied by a portable 500-gal. tank carried on a Ford dump truck.

For primary blasting both Atlas and Trojan 6-in. dynamite is used. Due to the large spacing used, the holes are generally loaded solid, except for the extreme upper portion. Generally 6 or 7 holes, in a single row, are shot, each blast bringing down 15,000 to 18,000 tons of stone. When Atlas dynamite is used, the holes are fired with millisecond delay caps. The Trojan powder is detonated with Atlas No. 6 electric blasting caps, used in conjunction with a timer. In both cases, however, a blasting machine is used. Fragmentation is excellent, due to the thin-bedded characteristic of the deposit, as well as to the efficient primary blasting techniques developed.

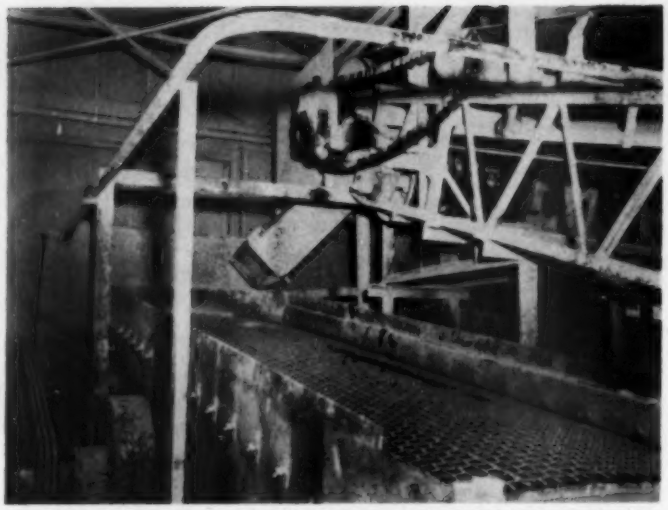
As a result of the excellent breakage, secondary blasting, which is accomplished through use of shaped

Shaped charges are used for secondary blasting. Left: a 5-in. diameter charge is placed on a two-ton boulder. Right: after secondary blast, the boulder is successfully broken.

charges, is kept to the minimum. Individual charges used are 5 in. in diameter; these are recommended for boulders up to 2 tons in weight. They are supplied by the Shaped Charges Explosive Manufacturing Co., Inc. For unusually large-sized boulders (which are relatively uncommon), two charges, placed one on top the other and detonated with one cap, have been used successfully. Because of the convenience, practicability, and economy, the Fayette operators stated that this method of shooting has proved to be very advantageous at their quarry. Because of the limited need for secondary work, it is felt that this method is much more practical than either blockholing or dropballing. Furthermore, there is an appreciable safety factor to both men and equipment due to the lack of flying debris; in fact, shovels and trucks in the vicinity of the blast need not be moved.

Quarry loading is handled by a Northwest No. 6 diesel-powered shovel, equipped with an American Manganese 1½-cu. yd. bucket. Two heavy-duty dump trucks, one an F-8 Ford and the other a KB8 International, transport the material to the primary crusher. Both trucks are equipped with Daybrook Boulder Dam 8-cu. yd. end-dump bodies, which are raised by double-action 7-in. hoists.

Quarry drainage presents only a minor problem because the quarry is located on relatively high ground; it is handled by two Jaeger pumps, one a 3-in. gasoline portable unit and the other a 6-in. stationary unit driven by a 25-hp. General Electric motor. The drainage system consists of two sump holes, one located in a remote section of the quarry and served by the 3-in. pump and the other near the primary crusher and served by the 6-in. pump. Water is pumped from one sump to the other *via* a section of 3-in. galvanized pipe and a drainage ditch. The pumps are used only intermittently, generally after heavy precipitation. Only one pump is electrically driven, simply because the power line does not extend throughout the quarry. The line reaches only as far as the primary crushing station, which is located immediately below the crushed stone plant.

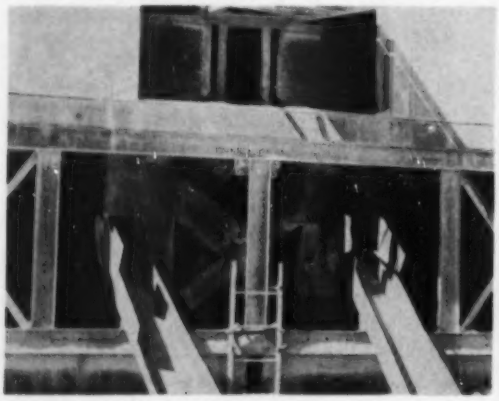


One of two triple-deck, 4- by 12-ft. vibrating screens in the stone-sizing plant. The chain-and-sprocket (at the top of the picture) drives the belt conveyor leading from the quarry.

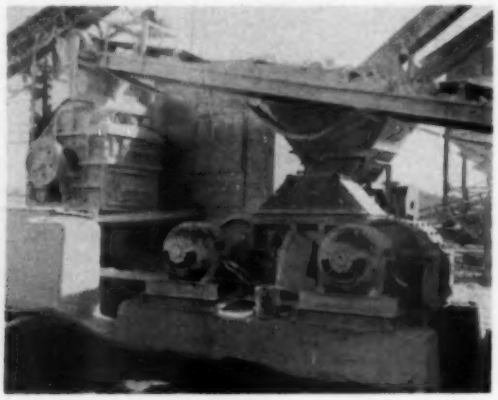
One of the unique features of the Fayette quarry is found in the primary crushing operation, which consists of a Pioneer 14-in. by 42-in. jaw crusher operated in closed circuit with a 3-ft. by 10-ft. Pioneer scalping screen. The units are located on the quarry floor immediately below the screening plant. Production averages 200 t.p.h.

Truck loads are dumped in a 15-ton hopped over a 14-ft. by 42-ft. apron feeder, which feeds directly to the jaw crusher. By means of a Wagner 125-hp. a.-c. 1,200 r.p.m. motor and a 14 V-belt drive, the jaw flywheel shaft is driven at 250 r.p.m. The flywheel shaft in turn drives the apron feeder through a chain-and-sprocket arrangement. Under normal operation the jaw is set at a 4-in. opening. The material is transferred by a 30-in. by 60-ft. inclined belt conveyor to the single-deck scalping

A closeup of the stone-sizing plant, showing the cross-chute arrangement under two 4- by 12-ft. screens and over the bins. The chutes in the foreground lead to the hammermills.



These three hammermills are used for secondary and tertiary crushing in the crushed stone plant. The two 30- by 40-in. units on the right are in constant use. The belt conveyor at the top left is the one issuing from the primary crusher.



screen, which generally has 4-in. opening cloth. Oversize material is returned to the apron feeder and jaw crusher *via* another 30-in. by 60-ft. inclined belt conveyor, while the throughs are conveyed out of the quarry to the screening plant on a 30-in. by 250-ft. inclined belt conveyor. This latter conveyor is equipped with a gravity belt tightener. Both 60-ft. conveyors are driven by 7½-hp. Reliance motors, through V-belts, while a 40-hp. General Electric motor, through a V-belt and chain-and-sprocket, drives the 250-ft. conveyor. Five-ply 32-oz. duck rubber belting, having ⅛-in. cover and 1/32-in. bottom, is used on these three units.

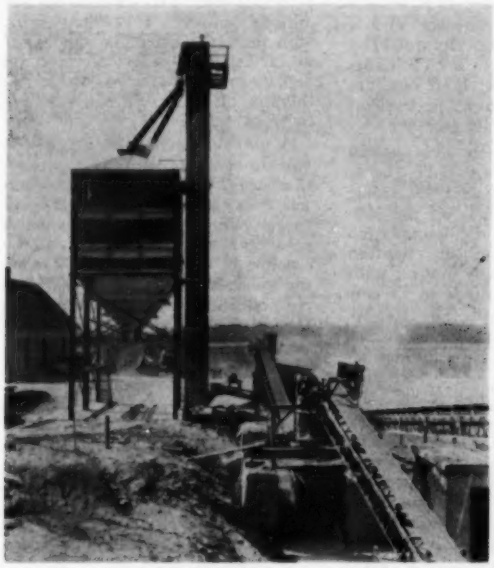
According to Fayette officials, the primary crusher is operated in closed circuit in order to provide a controlled top size going to the screening plant, thereby facilitating the production of better finished products. In addition, it was reported that by returning oversize material to the crusher, better crushing action is achieved, since the material works down between the large quarry run material and keeps the crusher full and operating to capacity at all times.

In the covered screening plant the material from the primary scalping screen is diverted to two Pioneer 4-ft. triple-deck vibrating screens, each driven by a 15-hp. Reliance motor. The screen equipped with 1½-in., ¾-in, and ¼in. openings, are mounted over a four-compartmented steel bin, two compartments having a capacity of 50 tons each and the others a capacity of 25 tons each. Crushed stone passing through the bottom deck of each screen is discharged directly into the two larger bins, while the smaller bins receive material from the other decks. By means of a system of three pairs of cross-chutes, each equipped with gates, which issue from both screens, a variety of stone sizes can be produced. During the writer's visit, No. 34 stone (1½- to ½-in.) was produced in one of the small bins and No. 46 stone (¾- to ¼-in.) in the other small bin.

Secondary and tertiary crushing in the crushed stone plant are accomplished by three American Pulverizer hammermills, two of which are used constantly and the other only when the crushed stone plant is producing agstone; a fourth American hammermill is used in the separate agstone plant. Like the primary crushing operation, each of the hammermills is operated in closed circuit.

The two hammermills in constant use are identical 30-in. by 40-in. units, each driven at 1,200 r.p.m. by a 150-hp. G. E. direct-connected motor. These mills, mounted side by side, are fed by a Pioneer 36-in. mechanical feeder, the minus 4-in. plus 1½-in. material being chuted directly to the feeder from the top deck of both 4- by 12-ft. screens referred to earlier The pulverized material discharged from the hammermills is returned to the screening plant *via* a 30-in. by 70-ft. inclined belt conveyor, which feeds the 250-ft. conveyor coming from the quarry.

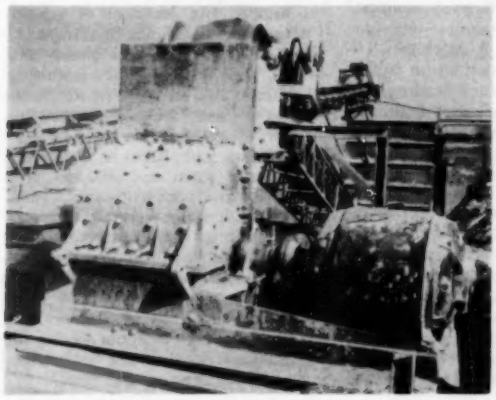
The third hammermill is an ACS-4 model, driven at 900 r.p.m.; it is located adjacent to the other mills and discharges material to the same 70-ft. belt as the other two hammermills. Unlike the other two pulverizers,

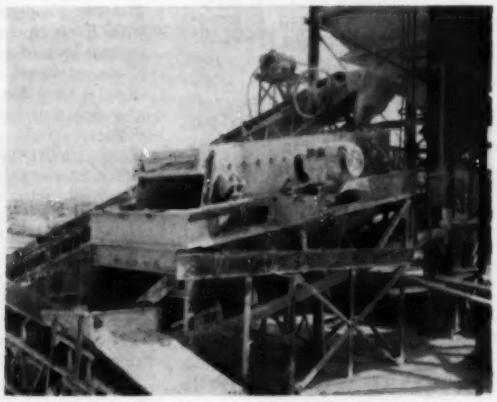


Left: A general view of the closed-circuit agstone plant, showing the belt conveyor feed to the hammermill, another belt conveyor to the sizing screen, the oversize return belt conveyor, and the 400-ton agstone bin.

Below, left: A high-speed hammermill, driven by a 400-hp. motor, is used in the agstone plant.

The agstone is sized on a 4- by 12-ft. vibrating screen. Oversize is returned to the hammermill, while the finished product is conveyed to the steel bin via a belt conveyor and a bucket elevator.





One of Fayette's three double-tube type agstone spreader trucks leaving the bin after loading.

however, this one is charged with crushed stone originating from one of the smaller bins referred to earlier. The material from the bin is withdrawn by a Syntron feeder and conveyed to the mill by a 24-in. by 30-ft. belt conveyor. The ACS-4 mill has an unusual drive, which consists of two Allis-Chalmers 200-hp., 1,800-r.p.m. motors, each V-belted with 26 belts to the countershaft driving the hammers. This drive is actually a substitute for a 400-hp. motor which could not be obtained at the time the hammermill was installed. As mentioned before, this hammermill is generally used when the screening plant is changed over partially to agstone production during the busy season.

The agstone plant, which is completely automatic, is an entirely separate unit; it represents the most recent of the major plant improvements, having been installed two years ago. The new plant is conveniently located along the ramp leading into the quarry. This has permitted the plant's 100 ton steel surge bin to be charged at surface level by dump trucks. Materials ranging from screenings to 2½-in. stone are used; they are brought either directly from the crushed stone plant or from stockpile.

The principal units of the agstone plant are an American Pulverizer high-speed hammermill (Model WS-40-UR) operating in closed circuit with a Pioneer 4-ft. by 12-ft. single-deck vibrating screen. The plant, which has a capacity of 50 t.p.h., produces a finished product averaging 100 percent through 8-mesh and approximately 35 to 40 percent through 100-mesh. The owners are presently experimenting to produce an even finer product.

The material is delivered to the hammermill from the surge bin *via* a 24-in. by 70-ft. inclined belt conveyor, which is fed by a Syntron feeder. The hammermill, driven by a direct-connected Louis Allis 400-hp. motor at 1,800 r.p.m., discharges the pulverized product onto another 24-in. belt conveyor (60 ft. long), which in turn feeds the vibrating screen. This finished-product screen, driven by a G. E. 15-hp. enclosed motor, is equipped with 10-mesh wire cloth. In order to prevent the openings from clogging, the Fayette owners have fitted the screen with a rubber ball tray. Oversize from the screen is returned to the surge bin *via* a 24-in. by 120-ft. inclined belt conveyor and is thus recircuited. The conveyors serving the screen are driven by G. E. 7½-hp. enclosed units, while a G. E. 15-hp. motor drives the belt feeding the hammermill. The motors are enclosed because of the high degree of fine dust produced by the agstone plant.

Pulverized limestone passing through the Pioneer screen represents finished product. It is conveyed to two 200-ton Webster steel bins *via* a short 24-in. belt conveyor and a Webster 65-ft. bucket elevator. The latter unit is driven by a U. S. Gearhead 7½-hp. motor. Both bins are equipped with Syntron bin level indicators and clamshell gates.

The operation of the new agstone plant is entirely automatic, being controlled by a Mosher Electronic Control System. Whenever the 400-hp. motor driving the hammermill becomes overloaded, the Syntron feeder is automatically shut off until the motor voltage drops to 95 percent of the full load. The 400-hp. motor mentioned above is started with an A. B. switch. In addition all units in the agstone plant, including belt conveyors, are interlocked.

Rounding out their operation, Fayette maintains a variety of rolling equipment. Five Ford dump trucks (four F-6 and one F-8) are used for stockpiling and for aggregate deliveries. The firm also specializes in custom agstone and fertilizer spreading, using two International trucks and one Ford truck, each equipped with Even Spread double-tube-type agstone spreaders. A Michigan T6-K power shovel, mounted on rubber tires, is used for truck loading and also stripping operations. In addition delivery trucks are loaded with a Haiss bucket-type loader and an Allis-Chalmers HD-5 diesel tractor equipped with a front-end loader. This latter unit is also used in clean-up work around the shovel in the quarry.

Located in a predominantly livestock farming district, the Fayette firm markets more than half of its product to the farmer, primarily for agliming, but also for feed lots. Approximately 50 percent of the sales

In this view O. L. (Bud) Ohnstad, secretary-treasurer of Fayette Limestone Co., is shown testing soil samples for their pH value, using the Woodruff test method. This service is done free of charge for the farmers.

represents agstone. Road ballast and concrete aggregates are the other principal uses. The service area for agstone comprises a 12-county area, with deliveries extending out as far as 60 miles. Non-agstone products are generally marketed within 25 miles of the plant. All deliveries are by truck.

A particularly fine feature of the Fayette operation is its sales promotion work. First, the firm performs soil tests for the farmer free of charge. The tests are used to determine both the pH of the soil and the amount of aglime needed to bring the soil to a neutral pH level. Lime requirements are ascertained through use of the Woodruff Soil Limeter Gauge, the same instrument used by the P. M. A. in its soil testing.

Another worthy project is the promotion of farmers' feed lots, which are constructed with a base course of 2- and 3-in. stone topped with screenings or chips. The owners point out that muddy feed lots mean unnecessary hard work, wasted feed, manure losses, diseases and injuries, and smaller livestock gains. Thus, feed lots really pay dividends.

Finally, the company is actively interested in all kinds of farm activities. The officials work closely with local, state, and federal agricultural agencies, as well as "Friends of the Land", the "Green Pastures Program."

Officials and owners of the Fayette Limestone Company include Alvin R. Armbrust, president, and Orval L. (Bud) Ohnstad, secretary-treasurer. Mr. Armbrust is also treasurer of the National Agricultural Limestone Institute, Washington, D. C. Leo Fischer is a full-time salesman, dealing almost entirely in agstone sales. The firm employs about 18 regular employees. The quarry is operated throughout the year.

For Your Own Protection —
MAINTAIN A TAX RESERVE

By HAROLD J. ASHE

WITH income taxes continuing high and virtually all other taxes rising, it becomes more imperative than ever that pit-and-quarry operators maintain adequate tax reserves out of which tax obligations can be met promptly when due, without creating periodic financial crises.

Not long ago one businessman experienced disastrous difficulties due to his failure to meet his tax obligations. He used funds that should have been reserved for taxes, applying them to other needs. He knew such funds were not really his. His attitude was "The government can't get blood out of a turnip; it will just have to wait until I get ready to pay."

Today this ex-businessman is a wiser and sadder man. Finding that his failure to pay taxes promptly was by deliberate and calculated plan, the government moved in fast. First it padlocked the business. Later it was reopened under a management selected by the government. This temporary manager was charged with only one task: to realize enough from the business to satisfy government tax claims, with no regard for the long-range effect on the business. When this was accomplished, along with appropriate tax penalties, the business reverted to its owner. Immediately he was forced into involuntary bankruptcy. Creditors lost confidence in the owner's management ability, as well as in his integrity. He lost everything because he played with money owed the government for income, unemployment, and old-age taxes. Although this case is an extreme one, it is a matter of record, and it should serve as a timely warning to others. It underscores the importance of maintaining a genuine tax reserve.

Even unintentional tax delinquency should be avoided. It is possible to get an extension of time in the payment of income taxes, if the facts warrant leniency; but taxpayers should not count on time extensions. Allowing a taxpayer additional time in which to settle his personal income tax assessment is optional and at the discretion of the local director of Internal Revenue. If such a request is denied, there is no appeal.

Often a harassed taxpayer tries to meet tax obligations on past business from current income. This is a risky management policy. The funds with which to meet all tax charges should be accumulated as taxes are incurred and should be coincident with the earnings of the income being taxed.

For example, there is a time lag between the period for which income taxes are assessed and the final due date. Many businessmen on December 31 do not have funds available from the year's net income with which to pay the balance due on their income tax. Yet it should be obvious that the income tax should be available from the income already earned and taxed, and that this payment should not be dependent on future income not yet earned. Nevertheless, many taxpayers depend on earnings from January 1 to March 15 of the following year to provide them with funds to settle the previous year's tax balance.

This accounts, in part, for the loud cry that goes up around March 15 each year. Aside from the tax burden itself, taxpayers must scratch around and out of the limited earnings of the new year pungle up tax balances, just at the time when first quarter payments on the new year's tax estimate are due.

Businessmen are handling more different kinds of taxes—and pay more in taxes—than ever before, and the end is not in sight. As time goes on, the percentage of funds that pass through a businessman's hands which are ear-marked for the government will become greater and greater. Some of these taxes are assessed directly against the businessman. Other taxes go through his hands in his capacity as gratuitous tax collector for local, state, and the Federal Government. He collects from both employees and customers, even while worrying about his own tax assessments.

Here are some of the principal taxes a businessman himself must pay: income tax; unemployment insurance tax, employer's share; old-age insurance tax, employer's share; old-age insurance tax, his own; business tax and licenses; real estate property tax; property tax, equipment, machinery, etc.

From customers he collects and holds in trust state and/or county and city sales taxes. From employees he collects and holds in trust the following: unemployment insurance tax, employees' share; old-age insurance tax, employees' share; and income tax withholding from employees.

If tax liabilities, as they accrue, are not segregated, a businessman may have a false sense of security as he studies his bank balance. Not infrequently, accumulated tax liabilities (even though not yet due and payable) may greatly exceed cash on hand.

It is unwise to assume that year after year tax liabilities can be met out of earnings at due date of tax payments. This ignores the incidence of sickness or death (always having a disastrous effect on closely held family corporations or proprietorship), or a sharp drop in business. Any of these events can result in decreased or non-existent earnings when tax bills must be met. In such circumstances costly sacrifices may be necessary to avoid delinquency charges or other even more severe penalties.

An adequate tax reserve, at any given time, will represent the following: funds sufficient to settle all withholding taxs collected from employees; unemployment insurance and old-age deductions from payroll, together with the employer's share; all sales taxes collected; property taxes pro rated to date, as well as the pro rata share of the taxpayer's estimated income tax; and his own old-age insurance tax.

Thus, if $100 has been withheld from employees and has not yet been remitted to the government, this should be available in the tax reserve fund. If two months of a quarter have elapsed, the taxpayer should have in the reserve two-thirds of the amount necessary to meet his quarterly income tax payment. At the year's end the reserve should be able to satisfy the unpaid income tax balance above the total of quarterly payments already made on his estimated tax.

Tax funds held in trust for the government, as well as the rising tax obligations of the individual businessman, should not be mingled with

(*Continued on page* 92)

Screenings

by William M. Avery

WE'VE just received a most fascinating letter from a man down in Georgia who claims there are more minerals in his area than in any other part of the United States. "Best of all," he wrote, "is the Confederate Treasury (gold) buried near here—$12,000,000 worth unaccounted for—$4,000,000 already found. I have located part and will start digging when weather permits. It's a 24-hr. job and no leaving it."

As we read his letter, we felt sure he was going to offer us a chance to buy into the enterprise, but the mean old thing didn't even drop a hint. We're going to look into the matter further—just as soon as we get through helping a bloke down in Mexico City regain possession of a trunk-full of Aztec gold which is being held in a customs warehouse for payment of duty.

Look, Ma, I'm Climbing!

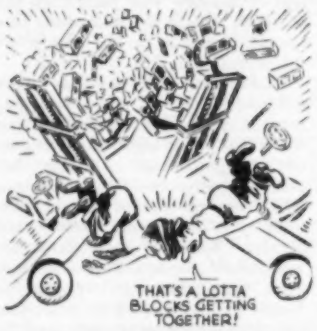
AN intriguing use for abandoned quarries is suggested by a recent newspaper report of an outing of the Chicago Mountaineers Club. Since their native city and its environs were completely overlooked when mountains were passed around,

the resourceful club members opened the 1953 mountain-climbing season by scaling the walls of an abandoned water-filled quarry near Joliet.

We would have supposed that just any old reasonably mild day would serve for an outing of this sort, but that just goes to show how much we don't know about the serious art of mountain climbing. The Mountaineers, anyhow, chose a raw Sunday in March, when the weather forecast called for high winds and frequent snow squalls. After the intrepid party regained the comparative safety of its advance base, a communique flashed back to civilization the stirring news that the whole affair had been conducted under weather conditions closely approximating those which might prevail on a 14,000-ft. mountain peak in midsummer.

Ride 'Em Cowboy

A RECENT issue of *Modern Materials Handling* offers some sober advice on how to set up and run a "fork truck rodeo". In case our eager readers can't locate a copy of this incitement to mayhem, we suggest they visit a busy block plant some day when the curing rooms



are being unloaded. It's our own personal opinion that whenever two fork trucks operate simultaneously in the same general area, a rodeo-like effect is going to be achieved regardless of the intent of the participants.

Foresight Saga

THE *Journal of the American Medical Association* reports to an eagerly waiting world that concrete burial vaults make satisfactory receptacles for the disposal of radioactive waste. No doubt, that's a problem we'll have to face one of these days, but it wouldn't surprise us a bit to learn that Uncle Sam has a 999-year supply of the things stashed away somewhere.

Change of Rules

ONE more of our dwindling illusions took a severe beating the other day when the American Management Association came out with the forthright statement that marrying the boss' daughter is no longer the key to success in industry. The association spokesman, however, didn't come right out and say that becoming the boss' son-in-law would prove to be an insurmountable handicap, so perhaps those who have already established this formerly useful relationship might maintain it for a while on a what-the-hell-do-I-have-to-lose basis.

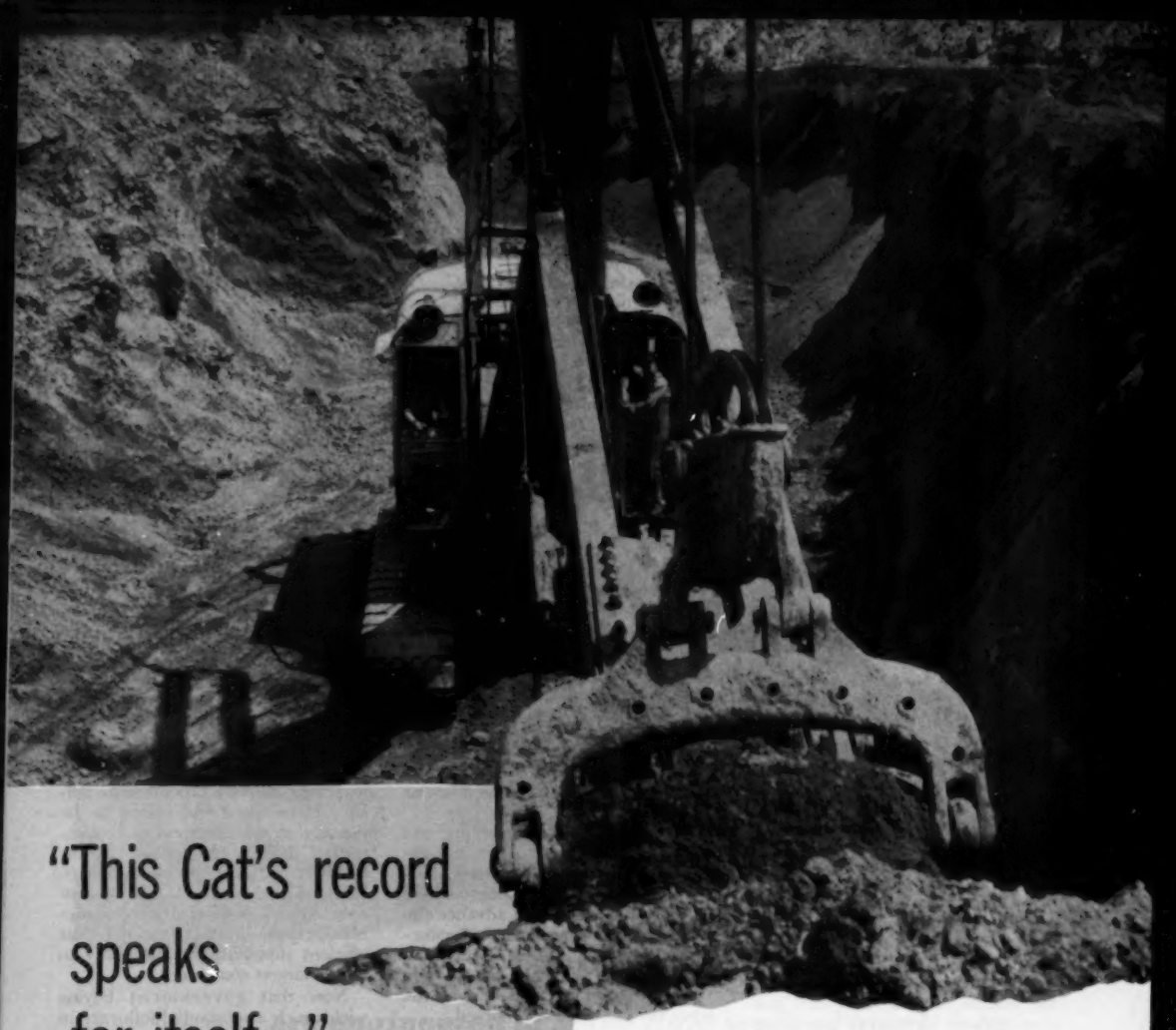
False Alarm

THE test tube lads have chalked up another major victory with the development of a process for making granite. Seems they have succeeded in crystallizing boiling mixtures of silicon, potassium, sodium, and aluminum to produce a material which cannot be distinguished under a microscope from granite.

This announcement should not touch off a wave of suicides among operators of granite quarries. The reason the bright boys found out that the stuff they had made looked okay under a microscope was on account of they *had* to use a microscope to see it at all.

Forecast

SOME unidentified hero has figured out that the world's yearly output of portland cement is sufficient to pave a road 150 ft. wide and eight in. thick around the equator. Not to be outdone, we have figured out to our own satisfaction that if only two cars were in operation on that hypothetical road, they'd both be involved in smashups before the end of the week.



"This Cat's record speaks for itself..."

... says D. K. Pickens, whose Caterpillar-powered Manitowoc shovel is shown at an open gravel pit near Paducah, Ky. After four and a half years of dusty, hard digging, here is the record of this D17000 Diesel Engine:

LONG LIFE: More than *12,000 hours* on the meter *without major overhaul*, thanks to the simplicity and ruggedness of Caterpillar construction.

HIGH OUTPUT: Stripping clay overburden is tough, but this Caterpillar 2½-yd. shovel moves 2,250 tons in a 16-hour day.

REAL ECONOMY: Fuel consumption averages only 8 gallons per hour. All Caterpillar Diesels get full power from money-saving No. 2 furnace oil without fouling. Low repair bills mean a big saving, too.

Leading machinery manufacturers can supply Caterpillar power in their products. These rugged, reliable Diesels are available in 12 sizes, up to 500 HP and 315 KW.

Talk over your power requirements with your Caterpillar Dealer. Let him show you how it pays to standardize on Cat* power for long engine life, operating economy, and fast, dependable service.

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

IT'S hard to put your finger on it, but here in Washington the atmosphere seems to be undergoing a subtle change—from buoyancy to uneasiness. The roots of this uneasiness are difficult to trace.

Some say it is due to the Administration's newness and its lack of experience. Others attribute it to the obvious split in the Republican party. Still others blame it on various scapegoats, such as Democratic holdovers, the "mess" the Republicans inherited, or the unpredictability of the men in the Kremlin.

But the more astute and seasoned political observers around Washington are beginning to say that the basic problem is that the Administration is rapidly coming to the point where it must make some of its toughest decisions—decisions which will determine its future and the welfare of the American people in the years to come. That there is substantial apprehension about how these decisions will be made should be no surprise.

On the economic front the Administration has thus far made one important decision. It was to raise the interest rate on government securities. The full impact of that decision, which was discussed on this page previously, is just now beginning to be felt.

The move which began by raising the interest rate on short-term government securities was advanced substantially when the Treasury offered its 30-year bonds at the high rate of 3¼ percent. The first reaction has already been felt in the other money markets, where the rate on prime commercial loans has risen from 3 to 3¼ percent. The rate on loans of lesser quality is sure to rise accordingly. Also, it has been necessary to raise the rate on F.H.A. and V.A. mortgages to attract any lenders at all.

The political repercussions are just beginning to be felt. Some congressmen are questioning the wisdom of increasing the cost of servicing the debt when they are trying to balance the budget and reduce taxes. The liberal wing in Congress is also beginning to ask whether this rise in the interest rate is not merely a procedure for transferring current income from the general, tax-paying public to the more affluent individual holders of government bonds and to insurance companies and other lending institutions. These are the kinds of questions which the Democrats are storing up for the torment of their opponents at strategic moments in the 1954 campaigns.

But that is a decision which the Administration has made and which it is apparently prepared to see through. On the question of taxes, the tough decisions still have to be made.

Originally President Eisenhower asked for a continuation of all present taxes, including the corporation excess profits tax, until the budget is balanced. That request turned out to be so at variance with political reality that it never got anywhere. At this writing it is clear that the Administration is fully reconciled not only to dropping the excess profits tax at mid-year but also to some reduction in the personal income tax at that time, even at the cost of a substantially unbalanced budget.

To accomplish this takes no real decision. The excess profits tax expires at mid-year by the terms of its own legislation, and Congress will be more than happy to advance the date of the previously enacted reduction in personal income taxes. The real decisions will have to be made when the promised revision of the basic tax structure is proposed.

The pattern being considered for that revision has already been revealed. It is called a better balanced tax structure; that is, a structure which balances the income derived from individual income taxes, corporation income taxes, and excise taxes. It is no secret that the keystone of the program is an increase in the portion accounted for by excise taxes. And along those lines, a broad federal sales tax is receiving the most serious study and consideration.

There is little doubt that a federal sales tax would be a potent revenue producer. If its full potentialities were realized, it is likely that the government's revenue requirements could be met with lower income taxes. A sales tax is not without difficulties however. Its collection is difficult and expensive, and it is as open to fraud as an income tax. It is among the most irritating of all taxes. If certain traditional exemptions on the necessities of life such as food and medicine are permitted, its revenue production falls substantially.

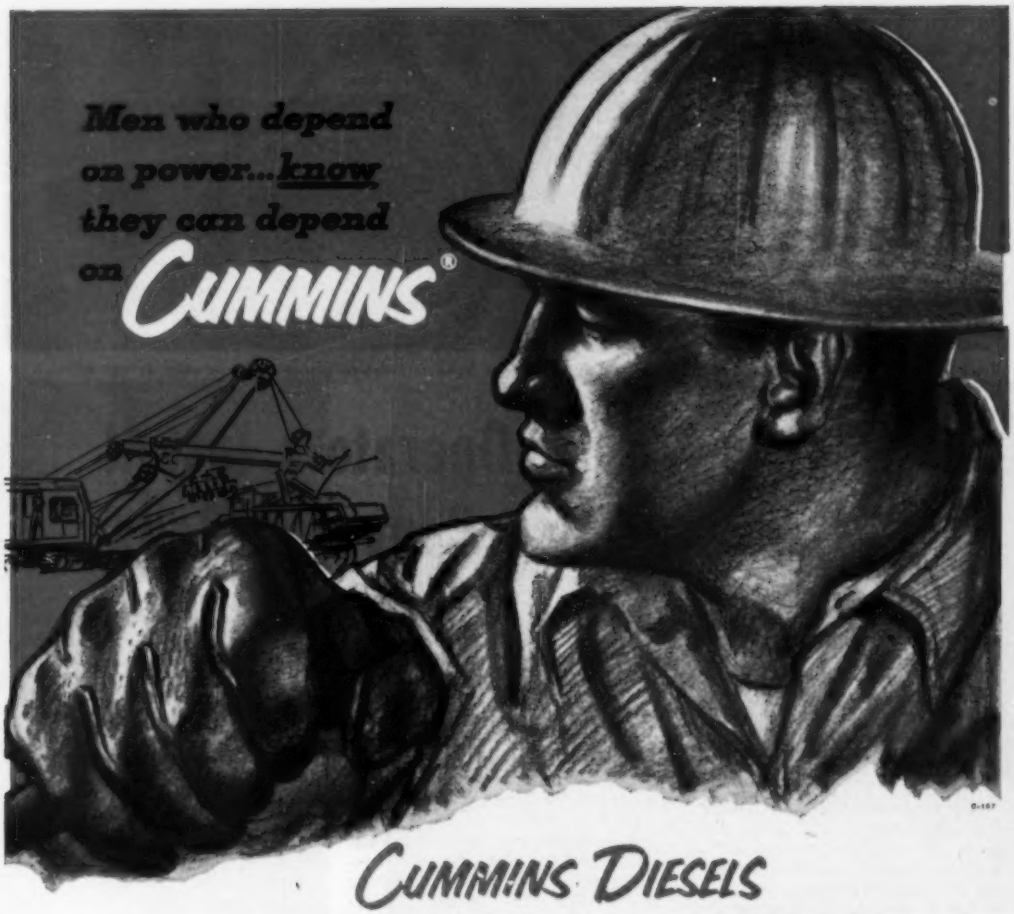
Shifting a part of the burden of taxation from income to sales taxes involves a far more fundamental decision. Basically, taxation is a method of transferring current income from the taxpayer to the government. Which method of taxation is used determines whose income is transferred to the government.

Generally, a sales tax is regarded as bearing more heavily on lower-income families. Such a move would also be sure to have substantial political repercussions. It would not be too much to expect the Democrats to ask the following "loaded" question: "Is a sales tax necessary so as to secure the increased revenue required to pay the higher interest rate to the holders of government bonds?"

Finally, there is a great uneasiness about the decisions in the making regarding military procurement policy. Here the trend seems to be running in the direction of concentrating military production in the hands of the most efficient suppliers. While this conclusion is not inescapable, there is a great deal of apprehension over the fact that the most efficient suppliers are also likely to be the largest companies.

Now that government buying wields such a substantial influence in the nation's economic life, the consequences of such a decision could be serious indeed. Despite protestations to the contrary, military procurement contracts are not unprofitable. It would be equally serious politically if the idea took hold that the revenue from a sales tax was being used to pay for military supplies bought almost exclusively from the largest companies.

These are typical of the difficult decisions which are pending. To make them properly requires an adroit weighing of their economic and political effects. With so much at stake, it is no wonder that they are slow in coming. Here in Washington, it is perfectly clear that the fight for control of Congress after 1954 is under way. Making these decisions will certainly influence the outcome of that fight; failing to make them will influence its outcome just as much.



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Upper end of the 528-ft. final conveyor at the plant of S. A. Carrieres Unies de Porphyre, Lessines, Belgium, which delivers 400 t.p.h. at a speed of 7.4 f.p.s.

Belgian Quarry Operators Install System of Long Conveyor Belts

HOW to transport crushed porphyry a distance of some 450 meters (about 490 yards), at the same time lifting it from a quarry about 90 meters (about 250 ft.) deep, was one of the problems re-

By JOHN GRINDROD

cently confronting S. A. Carrieres Unies de Porphyre, of Lessines, Belgium. The problem arose as part of a comprehensive program in which the company proposed to mechanize as far as possible the winning and dressing of porphyry at their workings.

The rock is quarried here by deep mining methods. The face of the quarry at present being worked being about 36 meters (about 118 ft.) in depth all told. The porphyry is extracted in two stages consisting, first, of an overhead stage of 18 meters (59 ft.), followed by a bench level of the same depth. An upper third face, not at present being worked, and an incline at surface level make up the full distance over which the rock has to be lifted.

After extraction the porphyry is loaded by means of a 2.7-cu. meter (about 3½-cu. yd.) shovel into 15-ton trucks which tip it into a 48-in. gyratory crusher. Following this the rock passes over two screens. What is left is then delivered into a 30-in. gyratory crusher. At this stage the porphyry is in a convenient size for handling by conveyor belt, and this method was adopted to transport it to the required point of delivery on the surface.

To cover the distance conveniently three separate conveyor belts have been installed. The bottom one, running at an incline of 19 degrees along one side of the quarry face, into part of which a groove has been blasted to allow its insertion, takes the rock from the lower part of the quarry to the bench level. The intermediary belt takes the porphyry from both the lower and bench levels to the surface, while the third conveyor carries it to the final crushing and sorting units of the Lessines plant. A part of the final conveyor runs at a gradient of 12 degrees, while the rest is at 5 degrees. Installed on metal frameworks, the three lines are respectively 135, 155, and 161 meters (about 443 ft., 505 ft., and 528 ft.) in length. The width of the bands is 915 mm. (36 in.), and this makes possible an hourly delivery of 400 tons at a speed of 2.25 meters (7.4 ft.) per sec. The respective powers developed by the conveyors are 85, 87, and 50 hp.

The lowest of the three conveyors has been so arranged that rock from the bottom stage is delivered onto a heap at the bench level. This accumulation of 3,000 tons or so serves as a floating or buffer supply which makes final delivery independent of the actual rate of extraction. Crushed rock from this heap is fed into a tunnel delivery by means of a Syntron vibrating feeder, and this serves the intermediary belt.

Because of the height of the buffer supply, the first conveyor belt has had to be inclined at a steeper gradient than would otherwise have been necessary. It is approximately 20 meters (about 66 ft.) from the point of delivery of this belt, which overhangs the point of feed of the second belt.

The electrically-operated conveyors can be remote controlled. The lower trunk is controlled from the floor of the quarry, while the other two runs are controlled from the surface. The rate of feed can also be controlled from the surface.

The winches of the conveyors are of the simple drum type, covered with rubber and revolving on roller bearings. A counter shaft mounted on ball bearings carries the pinion which drives the wheel on the drum shaft. This is driven by a pulley connected by a set of trapezoidal belts to a pinion on one end of an electric motor shaft turning at 1,000 r.p.m. At the other end of this shaft is a braking pulley fitted with double balanced shoes. Normally the controlling brake lever is kept in position magnetically through the power circuit, but, in the event of this failing, the freed control is activated by counter-weights. These bring the brakes progressively into play and prevent a heaving back of the belt, which force might otherwise be in the region of 2,500 kg. (5,500 lb.) for a belt carrying a charge of some 8 tons.

The assembly of these parts on a monoblock chassis permits their regulation and unified operation in

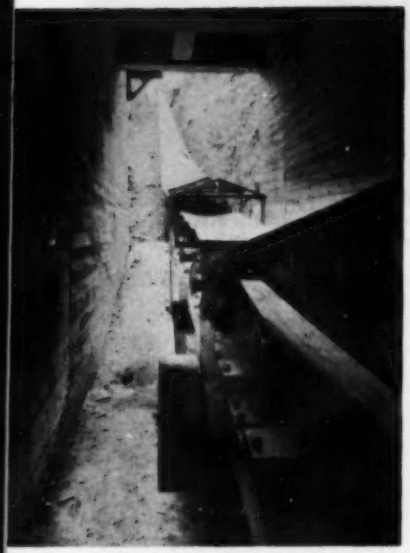
spite of any elastic deformation which might occur in the supporting metal superstructure. Steps have also been taken to insure the smooth working and the preservation in good order of the conveyor belts themselves and their roller bearings. Special feeding arrangements prevent the clogging and wedging of the belt and provide a satisfactory and adequate flow of material. Feelers provided on each of the transporters automatically correct the alignment of the belt should it get out of position.

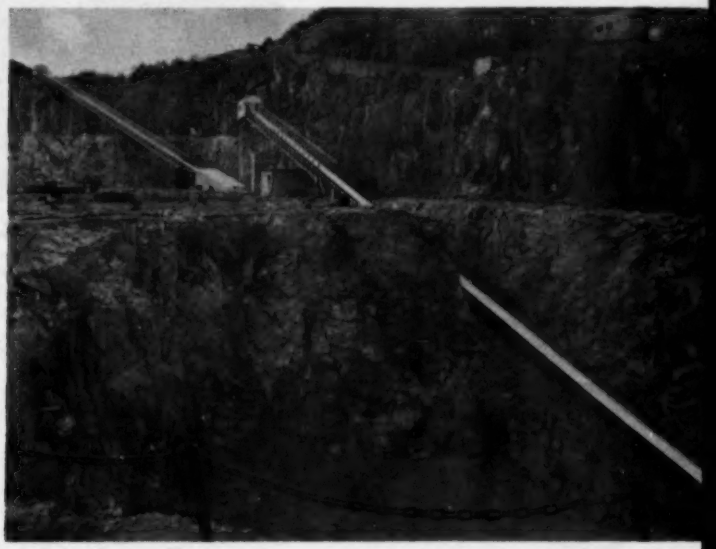
Built into a metal framework of large-span bridge type, both the machinery and the belts are fully enclosed. The machinery cabins are protected with corrugated galvanized steel, while the conveyor lengths are covered by plain galvanized steel.

Free expansion and contraction has been allowed for in the conveyors and bridges by a series of expansion and "buttonhole" joints throughout their entire lengths. Concrete-embedded pylon supports insure the stability of the superstructure although the pylon at the head of conveyor No. 3 is articulated. Gangways have been incorporated into the framework to provide facilities for the supervision, greasing, and upkeep of machinery and belting.

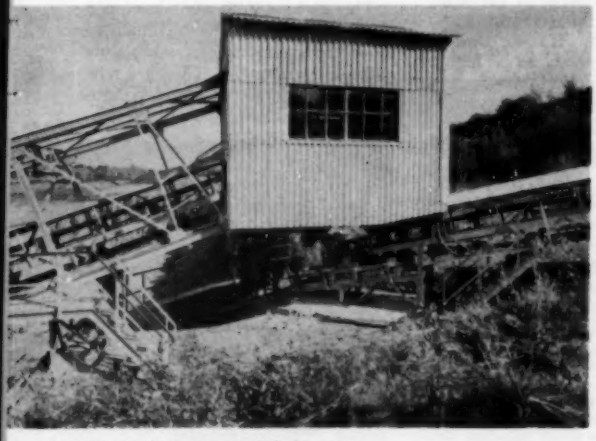
The installation was carried out by S. A. des Ateliers de Construction et Chaudronnerie de L'Est of Marchienne-au-Pont, Belgium. Rubber conveyor belts were supplied by Lechat et Gand. The writer is indebted to the Centre Belgo-Luxembourgeois d'Information de l'Acier for material from which this article has been prepared and for the loan of photos.

Concrete Supply Company, Charlotte, N. C., has announced plans for the construction of a $250,000 ready-mixed concrete plant on the north side of town.

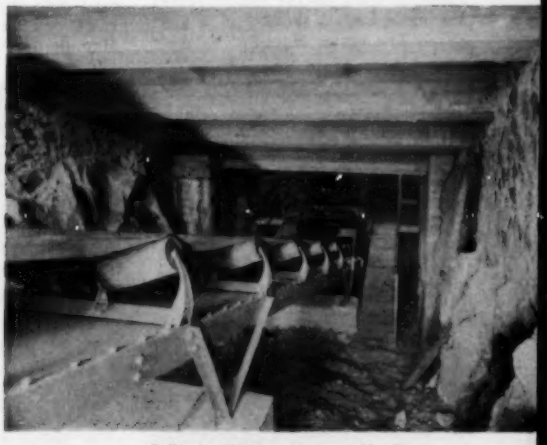




Above: Partial view of conveyor No. 1 (lower belt). Right: Conveyors No. 1 and 2 taking porphyry to the surface from the lower and bench levels.



The head of conveyor belt No. 2.



Roller bearings on conveyor No. 2.

New Sand Grinding Facilities Double Output at California Plant

another ON THE SPOT report

Completion of a new sand-grinding department by Del Monte Properties Company in the summer of 1952 has doubled the plant's grinding capacity and brought to a conclusion an extensive program of expansion and modernization which has

By HARRY F. UTLEY

been under way at the Pebble Beach, Calif., operations for the last several years.

Earlier the company had completed the installation of a flotation department to replace the gravity methods formerly employed in the beneficiation of the dune sands, this equipment being preceded by a series of attrition machines which first scour and scrub the sand particles.

With the completion of the current program, Del Monte now has a monthly production capacity of about 16,000 tons of quartz and high-alumina sands, and one of the finest processing installations in the American silica-sand industry. About a third of the output goes into the manufacture of glass containers and fiber-glass. Approximately one-fourth is taken by foundries in the West. Still another segment of the output, 25 to 30 percent of the total, goes into building products in the form of plaster, stucco, roofing, and the like.

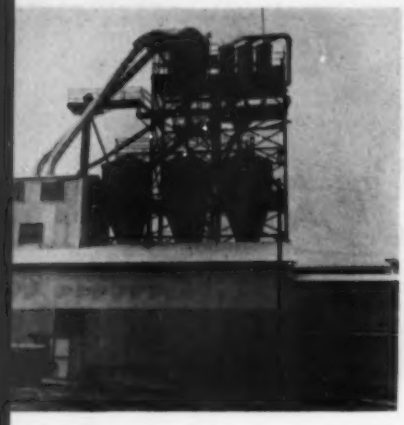
Del Monte has been processing the sand at one of the most picturesque spots on the Pacific shores for more than a quarter of a century. The writer described the earlier operations nearly a decade ago, when a series of concentrating tables and a bank of magnetic separators were depended on to remove the impurities. Some years ago advances in manufacturing techniques and elevated standards in the sand-consuming industries brought about a demand for higher quality sands. Sensing the need for changes in beneficiation to meet the market requirements, company officials, guided by flotation experts of the American Cyanamid Company, developed a new flow-sheet and installed pilot-plant facilities for the removal of the iron-bearing "heavies" in the sand, and the division of the sand itself into pure quartz and high-alumina fractions. Having worked out flotation methods to a highly satisfactory degree, Del Monte then proceeded to build and install the present facilities.

A general view of the Del Monte Properties Company's sand plant at Pebble Beach, Calif. The flotation building is at the left; the new grinding plant at the right.

Occurring as wind-blown dunes, the deposit is nearly pure white in color. All of it will pass 20-mesh, and there is little or no material finer than 100-mesh. The raw sand is made up of about half quartz and half high-alumina minerals, Fe_2O_3 content being in the range of 0.12 to 0.15 percent. The iron-bearing heavies include mica, monazite, ilmenite, garnet, and zircon. Al_2O_3 content will average 11.0 percent.

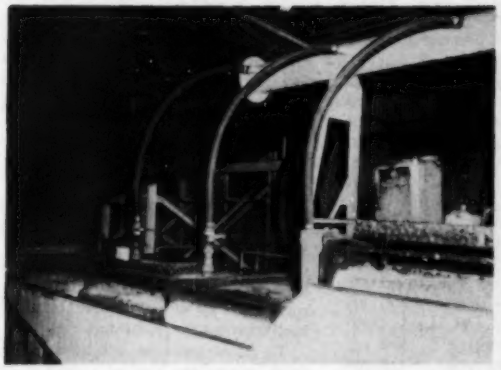
A bulldozer-equipped Caterpillar tractor and a ¾-cu. yd. shovel excavate and load a field hopper which feeds the sand to a 16-in. belt, several flights making up the field conveyor system running to the plant via a surge pile. Capacity on the raw side is 50 t.p.h. Trash and any pebbles are rejected by an Allis-Chalmers 4- by 12-ft. single-deck screen equipped with ⅜-in. mesh, the throughs dropping to an 80-ton surge bin which feeds the attrition mills.

The attrition mills were developed by Del Monte and Owens-Illinois to scour the sand particles thoroughly without degradation. They are now being manufactured under assignment by Western Machinery Com-

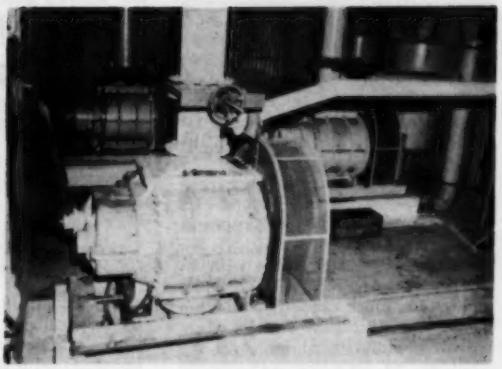


Left: The new grinding plant, with the product collector, storage bins, and dust collectors above. It adjoins the old mill building, seen at the right.

Right: The three six-cell attrition machines which scour the sand preparatory to flotation. Each is driven by an individual electric motor.



Some of the cleaner cells of the flotation equipment. In the background is the drum-type conditioner.



These three high-capacity blowers supply air at 5 p.s.i. to the flotation machines.

pany. Three six-cell attrition machines operating in parallel are used at Del Monte, handling a 75 percent solids pulp into which the sand is converted before its introduction.

Each 8½-cu. ft. cell is octagonal in shape, a vertical impeller shaft in each carrying three rubber covered, 6-blade agitators to scour and scrub the particles. Blades are pitched up and down alternately in successive cells, reversing the direction of flow six times as the pulp moves through the cells. This action develops the necessary grain-to-grain friction for scouring, yet it is gentle enough not to fracture the particles, nor wear away the grains appreciably. Each of the 18 impeller shafts is driven by its own U.S. motor, the first two in each of the sets being 15 hp., the others 10 hp. The pulp remains in each cell an average of 3 minutes, or 18 minutes to pass through all six cells. Combined capacity of the installation is about 1,000 tons per day.

The attrition-machine product, diluted to about 25 percent solids to facilitate pumping, is lifted by a Wemco 4-in. pump to a Ty-Rock 4- by 6-ft. 20-mesh screen, then to a 48-in. spiral classifier—screen oversize and classifier overflow being wasted. Before entering the Standard Steel Corporation 8- by 12-ft. drum-type conditioner, the iron-section flotation reagents are introduced. These nominally consist of:

Sulphuric acid	0.60 lb. per ton
Fuel oil	0.35 lb. per ton
American Cyanamid 801	0.65 lb. per ton
American Cyanamid 825	0.40 lb. per ton
Pine oil	0.05 lb. per ton

The Standard horizontal conditioner is liberally fitted with large-capacity lifters to prevent stalling, since the harsh pulp is almost devoid of fines and slimes and would settle out rapidly unless hindered. The conditioner revolves at 3 r.p.m., being turned by a 15-hp. U.S. gear-motor.

The first flotation circuit, designed to remove the iron-bearing heavy material, is made up of 12 Steffensen No. 60 rougher cells, followed by 5 Steffensen No. 20 flotation cells, or cleaners. Rougher glass-sand tails (about .06 percent Fe_2O_3 and 11.25 percent Al_2O_3) are passed through a Wemco 36-in. spiral and three Wemco vertical conditioners before separation of quartz and high-alumina concentrates in 11 Steffensen No. 20 flotation cells (8 roughers and 3 cleaners). Flotation reagents for this section are introduced just ahead of the conditioners and are of the following composition:

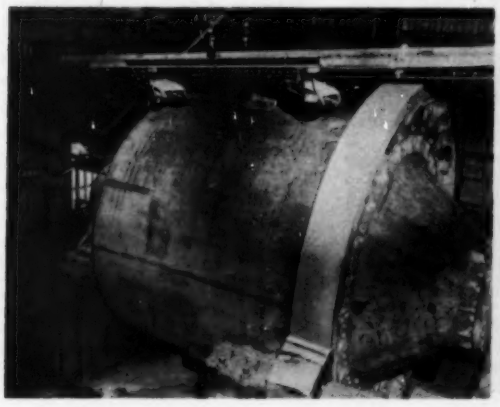
Hydrofluoric acid	0.70 lb. per ton
Armour amine	0.40 lb. per ton
Pine oil	0.10 lb. per ton
Reagent 31	0.05 lb. per ton

A pH of 2.5 is maintained in the iron reagent solution and about 3.5 in the quartz section.

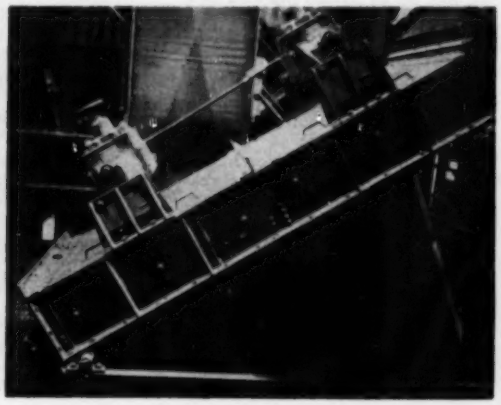
Three 18- by 30-in. Sutorbilt 125-hp. 3,500 c.f.m. blowers supply air at 5 p.s.i. to the flotation machines.

There is a high degree of flexibility in the circuits of the new flotation

The new 10-ft. by 96-in. pebble-mill has doubled grinding capacity at Del Monte. The Vibratory conveyor above returns screen rejects to the mill.



The electric vibrating screen which rejects air-classifier oversize for return to the new pebble-mill.



plant. Iron-bearing concentrates made in the primary circuit are stockpiled for possible re-treatment later. Much of the output is a natural 50-50 blend of quartz and high-alumina with the heavies removed, in demand by Western glass plants. The final quartz and high-alumina products are bin-drained after flotation. The finished concentrates contain from .08 to .09 percent Fe_2O_3, and 19 to 20 percent Al_2O_3.

The new grinding plant with its Hardinge 10-ft. by 96-in. pebble-mill has as much capacity as the old plant (two Hardinge 8-ft. by 60-in. air-swept mills), accounting for the doubling of grinding capacity in 1952.

After any moisture remaining is driven out of the processed sands by two Standard Steel Corp. 5- by 16-ft. gas-fired rotary driers, followed by coolers, finished products may be sacked or bulk-loaded without benefit of grinding, if desired. Present grinding capacity is now great enough to handle about 25 percent of the total plant capacity. The new equipment was installed adjacent to the old building, the supply coming by belt conveyor from the bins in the old grinding department where the quartz, high-alumina, and iron-floated sands are stored. The Goodrich "Maxecon" 12-in. belt running from these bins to the new Hardinge mill is 230 ft. on centers and remote-controlled. It discharges the sand into a small hopper and is fed to the mill by a Hardinge constant-weight feeder.

The mill is of the venturi type and turns on water-lubricated micarta bearings. It is powered by a Fairbanks-Morse 200-hp. motor driving through 12 strands of Gates Vulco V-belting. The mill is closed-circuited with a No. 90 Hardinge air-classifier, the mill product overflowing into an air stream supplied by a Clarage 40-hp. fan. Air enters at the discharge end, and reverses the flow within the mill to carry the product up to the classifier, again *via* the discharge end. This system permits close regulation of finished-product fineness.

A 10-ft. product collector follows the classifier, while tailings may either return directly to the pebble-mill, or be separated over an enclosed Tyler Hummer screen, plus 48-mesh rejects only returning to the mill. The return, in the case of screen oversize, is accomplished by a 27-ft. Syntron vibratory conveyor equipped with five pulsating electro-magnets to induce rapid flow. The conveyor is arranged in a straight line directly above the mill. Three finished ground products are binned, the finest being 98 percent through 200-mesh.

The new mill equipment is housed in a steel-frame building covered with cement-asbestos sheets, except for the product collector, finished product bins, and the dust collectors, which are steel-supported outdoors and above the mill-building roof. Excess air, bled off at the Clarage fan, is routed to the Dracco three-compartment bag type filters.

Development and consummation of the present flow-sheet was largely the responsibility of Del Monte company personnel, working in close co-operation with American Cyanamid technicians. Western-Knapp Engineering Company designed much of the flotation plant, with Del Monte handling the work of erection on both the flotation and grinding plants.

Samuel F. B. Morse is president of the Del Monte Properties Co. William E. Messner is plant manager; Charles J. Houseman, plant superintendent; and Henry Benech, metallurgist. Sales headquarters are maintained in San Francisco. P. C. Valentine is sales manager.

Diatomaceous Earth—

(*From page* 76)

ranging from silver polish to streptomycin, one of the new "wonder drugs", major uses are as filter-aids to speed the clarification of food products, pharmaceuticals, chemicals, etc.; as high-temperature insulating material around boilers, furnaces, etc.; as flatting and extender pigments for paints and varnishes; as domestic and industrial desiccants; and as general fillers in the making of paper and many other products. Actually, uses include practically every field of industrial endeavor.

E. R. Ingram is superintendent of the Lompoc plant. R. W. Yocum is assistant superintendent; Ray Ingram, quarry superintendent; Joseph Girard, chief chemist; and John Bradford, maintenance superintendent.

Sales and operating headquarters of the Dicalite Division are in Los Angeles, New York and Chicago being other major sales centers. Other sales and technical offices are maintained in such principal cities as San Francisco, St. Louis, New Orleans, Cleveland, and Cincinnati. A large foreign market is also supplied, export sales being handled through agents and distributors in virtually all foreign countries.

The Dicalite Division is but one of six operated by Great Lakes Carbon Corp. Others are: the Carbon Division, the Electrode Division, the Oil and Gas Division, the Perlite Division, and the Missouri Coke & Chemical Division.

Tax Reserve—

(*From page* 83)

other funds. If it is not practical to keep tax funds entirely separate at least a running and a constantly revised record of tax liabilities should be kept. Cash should never be permitted to drop below the total of such current tax liabilities.

To allow such tax liabilities to exceed immediate *available cash* is to appropriate to personal or business use government funds entrusted to the taxpayer which are not and never have been his. A defense may be made for not accumulating his own income taxes as he goes; but there is no excuse for misappropriating taxes collected from others, either employees or customers, such as sales tax, withholding tax, unemployment, and old-age insurance taxes.

The government takes a dim view of such financial juggling and unlawful conversion of government funds. Even if innocently done, through ignorance, it can cause embarrassment or worse for those mingling their own funds with those of the government and, even though only temporarily, "borrowing" the use of such government funds.

1951 Fuller's Earth Output Breaks All Past Records

According to reports of producers to the Bureau of Mines the production of fuller's earth in 1951 reached 483,623 short tons valued at $8,131,761, which exceeded all previous records. The tonnage increase was 22 percent more than 1950, the previous record year.

Fuller's earth consumed in mineral-oil refining in 1951 totaled 175,348 tons or 36 percent of the total output compared with 40 percent in 1950 and 47 percent in 1949. Absorbent uses took 97,465 tons (20 percent of the total compared with 21 percent in 1950); insecticides, 86,339 tons (18 percent, compared with 18 percent in 1950); rotary-drilling mud 79,469 tons (16 percent compared with 10 percent in 1950); and vegetable oil 20,251 tons, (4 percent compared with 5 percent in 1950). The remainder was in other filtering and clarifying binders.

Nevada was the only State that showed a tonnage decrease in 1951 over 1950. The Florida-Georgia area accounted for 62 percent of the total tonnage produced in 1951, the same as in 1950, while production in Texas represented 29 percent compared with 28 percent in 1950. The average value per short ton rose to $16.81 in 1951 compared with $16.42 in 1950 and $16.20 in 1949.

Agstone Division of Pennsylvania Stone Producers Holds Annual Sessions

THE annual business and open meetings of the Agricultural Limestone Division of the Pennsylvania Stone Producers Association were held at the Hotel Penn-Harris, Harrisburg, Pa., on Friday, March 27, 1953.

Officers elected were: chairman, Leonard S. Fry; vice-chairman, D. K. Shroyer; treasurer, H. M. Binkley; and secretary, H. H. Wagner. Members of the board of directors are as follows: Eastern Section, Ivan M. Martin and Fred Roberts; Central Section, W. O. Faylor and Glenn Hawthorne; Western Section, P. E. Heim and Herschel W. Lamb.

James H. Eakin, of The Pennsylvania State College Extension Service, discussed the use of the lime meter and the general lime requirements throughout Pennsylvania. He said that while his department has made many tests, there were not enough results available to determine those areas which were low in potash, phosphorus etc. However, he did have maps and charts which had been colored to indicate the wide area that required considerable lime to bring the soil up to a pH which would sustain useful vegetation.

Professor Eakin cautioned the group not to judge an area entirely on the soils samples which were submitted by farmers in that area. He pointed out that the lime-conscious farmer, the farmer who as a general rule applies lime, is the one who sends in samples to have tested, and his soils usually show a fairly high pH, whereas the farmer who does not use very much lime, if any, and is not lime-conscious, never sends any samples in to have them tested. Therefore of all those samples which are received for testing, a large proportion indicate a fairly high pH.

Overliming of soils is usually harmful to crop production, said the speaker, but he pointed out that soils should be tested periodically so that lime can be used on those soils that require it, and not on the fields that are already sufficiently limed. The needs for lime in Pennsylvania are still great, and large tonnages will be required in the future.

Professor Eakin declared that many farmers had been applying commercial fertilizers to their croplands year after year without giving any consideration to the liming requirements of these soils. As a result, the phosphate in their soils was almost entirely wasted.

Fred Merkle, professor of soil technology, Pennsylvania State College, said that only a few years ago it would have been considered almost heresy to plow under agricultural lime, as we assumed that the lime would leach down through the soils. Today we are convinced that it is a good practice to plow it under in order to obtain the best results. Dr. Merkle stated that while it may be economically unwise to overlime in most cases, even a pH of 8 is not harmful to the productivity of the soil. In cases where the pH is 8 or more, the farmer can omit the application of lime for one rotation or until the acidity comes up somewhat.

Glenn Miller, county agent, Lebanon County Agricultural Extension Service, stated that it is difficult to make a real evaluation from the application of lime. It is like evaluating what good the schools are to us, or the church, or state policies. However, we must look at it from the standpoint of what it would be like without lime, and try to evaluate from that viewpoint.

Clyde A. Zehner, state chairman of the Production and Marketing Administration, U. S. Department of Agriculture, discussed briefly the reorganization of the Conservation Branch of the Department of Agriculture under the new secretary, Ezra Benson. He explained that while the reorganization will make some change in the function of his department, it will not be serious enough greatly to reduce the services. However, he pointed out that the recommendation made by Secretary Benson for the 1954 appropriation could very seriously affect the farmers in Pennsylvania, as well as the producers of agricultural limestone.

He stated that this was true because of the suggested reduction in the ACP appropriation from $250,000,000 to $140,000,000 for the 1954 program. To make matters worse, Secretary Benson further suggested that assistance to farmers be restricted to the permanent type of conservation practices. Since lime is considered a reoccurring type of practice, this would eliminate assistance to farmers in purchasing liming materials.

● Ken Stephenson, G.&W.H. Corson Corp., Plymouth Meeting; James M. Montgomery, Bethlehem Steel Co., Steelton; and William O. Faylor, Faylor Lime & Stone Co., Middleburg.

● F. B. Kohr, H. E. Millard Lime & Stone Co., Annville; W. A. Hulshizer, Limestone Products Corp., Newton, N. J.; and H. W. Lamb, Grove City Limestone Co., Branchton.

Mining Progress Pictured in New Industrial Movie

Pay Dirt, an educational movie released by the Gardner-Denver Company, dramatizes the improved techniques which mining men and mining equipment manufacturers have developed for producing greater and greater tonnages of minerals.

It shows, for example, the strenuous hand drilling methods practiced years ago, followed by scenes of miners using early compressed air-powered rock drill models, and then the newest high-speed automatic drilling equipment.

Pay Dirt is a 16mm. sound, color film that runs for about 30 minutes. It is one of a number of films on construction and mining subjects which are available from the Gardner-Denver film library at no cost. These films may be obtained from Gardner-Denver Company, Quincy, Ill., for showing at schools, association meetings, civic meetings, and other gatherings.

Lake Asbestos of Quebec Plans 5,000-Ton-a-Day Mill

Lake Asbestos of Quebec, a subsidiary of the American Smelting and Refining Corporation, has exercised an option to open an asbestos mine and construct a mill.

The mine is to be located on the Black Lake property of the United Asbestos Corporation. To place the property in production Black Lake must be drained and the mine and mill constructed. These operations are expected to cost more than $15,000,000. It was indicated that the mill will have a 5,000-ton daily capacity.

Proven ore reserves are reported to amount to 48,000,000 tons, having a value of about $500,000,000, and indicated ore would bring the total reserve up to 100,000,000 tons, valued at about $1,000,000,000.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER
Industrial and Labor Economist
Washington, D. C. • Philadelphia, Pa.

The Trend of Wages

another P&Q exclusive

THE trend of wages continues upward, but at a slower rate. Despite the fact that the cost of living has remained practically unchanged for more than a year, wage rates have continued to rise, and the end is not in sight. However, the speed of that rise has slowed down.

In contract after contract where a wage rate increase has been negotiated, the increase this year has been smaller than last year's increase. In addition, lengthy strikes for substantial wage increases have been settled for raises smaller than were initially demanded.

The latest evidence of a decline in the momentum of the drive for higher wages is seen in the very mild approach taken by the C.I.O. Steelworkers Unions in requesting wage increases from the steel companies. They have been careful not to make a specific cents per hour demand nor even to follow the traditional procedure of demanding a "substantial" increase.

It now appears that there is at least a reasonable chance that no extraordinary increase will be demanded by the coal miners this year. Certainly, the depressed condition of the market for coal would make this likely. Apprehension over developments in other markets, both in soft goods, such as textiles and clothing, and hard goods, such as automobiles and appliances, accounts in great part for the general caution.

The only important exception appears to be the construction industries. Here the unions are still demanding and generally winning increases of 10, 25, and even 35 cents an hour. In part, this trend represents evidence of the continued prosperity of that industry. There is also another attitude—that this may be the last good building season for a long time to come. Getting a large wage increase is regarded as a matter of now or (perhaps) never.

The Two-Way Escalator

Many workers are not so much worried about the wage increases they might get this year as about holding on to those they have already secured. These are primarily the workers whose wages were controlled by an escalator clause which adjusted wages in accordance with changes in a cost-of-living index.

When the cost of living was rising rapidly, particularly during the year and a half following the outbreak of the Korean War, many unions and employers agreed to such clauses. Now that the cost of living has fallen temporarily in early 1953, and it looks as though this may happen again, most of these unions are trying to get their wages "unhinged" from the cost-of-living index. In the railroad and automobile industries the temporary decline actually resulted in wage reductions.

The rub is that the unions want included in their basic wage rates all of the increases which were made when the cost of living was rising. But now that the cost of living may fall, they want to jump off of the two-way escalator.

In justice to the unions which originally agreed to two-way escalators and now want to get out of the deal, it must be pointed out that the policy of the Wage Stabilization Board put them at a disadvantage. That Board permitted the operation of formal escalator clauses which required wages to go up and down with the cost of living. But if no formal escalator clause was agreed upon, the Board permitted wage increases every six months to keep up with increases in the cost of living but did not require wage decreases if the cost of living fell. As a result, workers who were not covered by formal escalator clauses received all the benefits of cost of living increases but suffered none of the penalties of cost of living decreases. Their cost of living increases became part of their basic wage rates. Now, as a curious by-product of the government's attempt to control wages, the workers covered by an escalator clause are trying to get themselves equal treatment with those who were not so covered.

More Taft-Hartley Amendments

Almost every day some senator or congressman gets an idea about how to solve a labor problem and introduces it as a possible amendment to the Taft-Hartley law.

Senator Smith of New Jersey, chairman of the Senate Labor Committee, recently introduced amendments which would exempt employers of less than 10 employees from the Taft-Hartley Act. He also wants to exempt the entire building and construction industry and most public utilities.

The effect would be to return jurisdiction over all their employees to the states. In many states this would mean that they would be subject to laws far more stringent than the Taft-Hartley Act. The unions who have no love for the Taft-Hartley Act are even more fearful of tangling with 48 state laws. Accordingly, most of them have opposed these amendments.

Earlier Representative Powell from New York's Harlem district and Senator Ives introduced similar amendments to make it an unfair labor practice for an employer or union to discriminate against a worker because of race, religion, color, or national origin. This, of course, is an attempt to achieve the aims of a Fair Employment Practice Law through a different approach.

Prevalence of the Union Shop

According to a recent government study, almost two-thirds of all union agreements covering about the same proportion of unionized workers include union shop clauses, that is, provisions wherein all the employees in the collective bargaining unit are required to be or to become members of the union. About three-fourths of the agreements covering the same proportion of unionized workers include either union shop or maintenance of membership clauses. The latter do not compel an employee to join a union but require those who are union members or become union members to maintain their membership for the duration of the agreement.

Thus, some form of union security is provided in the large majority of agreements. In addition, almost as many agreements, 71 percent covering 78 percent of the unionized workers, provide for check-off of union dues and, in many cases, for assessments as well.

In several industries — apparel, printing, rubber products, retail trade, hotels and restaurants, and, of course, construction—the proportions run substantially higher.

Riverside Cement Co. Records Higher Net Profit in 1952

Officials of the Riverside Cement Company, San Francisco, Calif., reported the 1952 net profit of the firm as $2,269,293, or $9.45 per share. In 1951 net profit amounted to $2,012,539, or $8.38 per share.

It was stated that during 1952 capital expenditures for increasing the capacity of the Oro Grande plant and for other improvements amounted to about $2,500,000.

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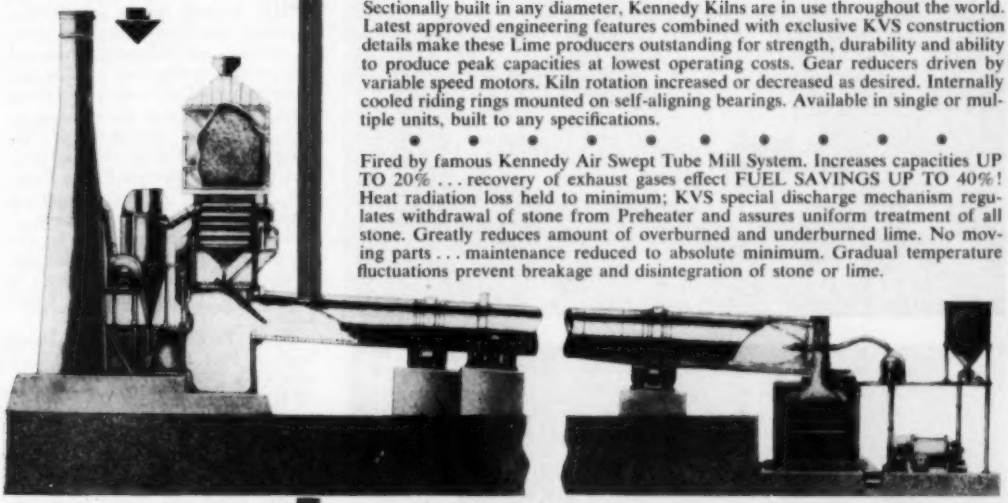

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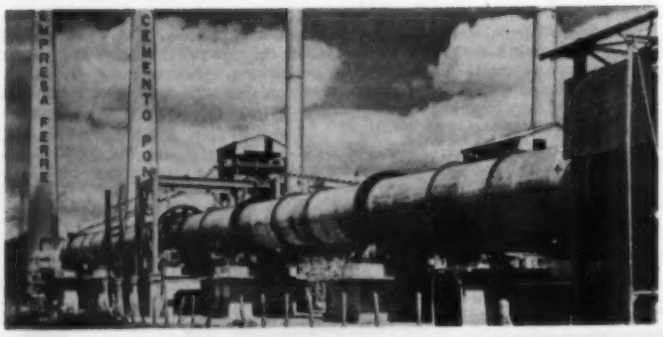
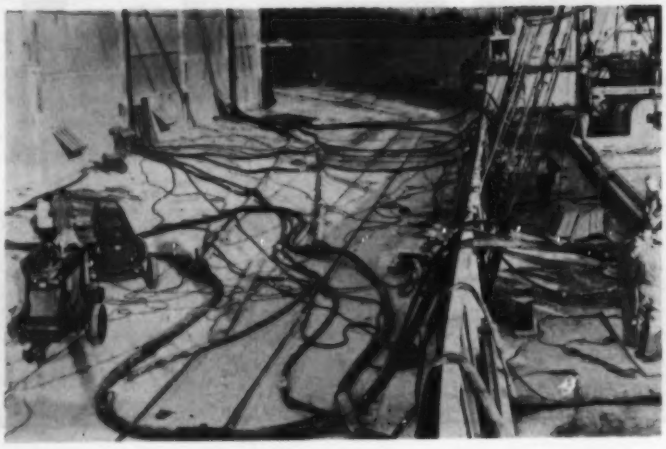
"The Ponce," 5,000-ton bulk cement carrier from Puerto Rico, at the Port Everglades dock ready to have its cargo pumped into the warehouse.

Ponce Products, Inc., Hauls Cement by Boat and Truck





THE cement supply in Florida, which has been critical for some years, is now being supplemented by a unique method of hauling the material in bulk by boat from Puerto Rico. The system is the creation of Jose A. Ferre, president of the Puerto Rico Cement Corporation and the newly formed Ponce Products, Inc. The methods employed however, are basically the same as those used for many years by the Huron Portland Cement Company in supplying cement to a network of distributing plants on the Great Lakes.

Ponce Products, Inc., has leased land in Fort Lauderdale and constructed a 150- by 200-ft. warehouse, 30 ft. high. The walls were precast in sections weighing from five to eight tons each and brought to the site by truck. This building has been named the Port Everglades Warehouse. Land now under lease provides for a 125-ft. extension of this building within the next three years.

The bulk cement shipped to Fort Lauderdale is of the Portland No. 1

Left, above: The bulk cement which is sent to Florida is manufactured in this plant at Ponce, Puerto Rico.

Left: Organized confusion aptly describes this scene at the Port Everglades dock. Through these pipes and hoses the bulk cement is pumped directly into the adjacent warehouse.

Not Mammoth cave, but almost as large. Interior of the Port Everglades warehouse after bulk cement was pumped into it from the hold of the delivering boat.

commercial type and is manufactured in the modern plant of the Ponce Cement Corp. From the plant it is pumped into a company-owned boat capable of carrying 4,600 tons of cement in its holds. At present a boat-load is brought over every ten days, but plans are being made to increase this tonnage in the near future. Upon reaching the Florida port, the cement is pumped out of the ship's holds through a maze of pipes and hose directly into the warehouse, where it is stored for future use.

From the warehouse, the bulk cement is again pumped to a large silo over the loading platform, then down the loading pipe into special tank trucks operated by the Florida Truck Lines, Inc. Trucks are loaded in about 55 seconds.

The association of cement and water is an old familiar one to those in the construction business, but this new wrinkle in the relation of the two is now placing Ponce Products, Inc., in a position to help equalize the supply and demand for Portland Cement in the South Florida area.

To facilitate distribution of his company's diversified products, Mr. Ferre has opened a Florida office in the new Pan American Bank Building in Miami. Associated with him are his three brothers, Luis, Carlos, and Herman, who are all graduate engineers of Massachusetts Institute of Technology. H. J. McCormack is general manager and treasurer of Ponce Products, Inc. W. Palmer Van Arsdale is president of Florida Tank Lines, Inc., contractors in charge of hauling the cement.

Below: Mrs. Jose A. Ferre opening a valve to start the flow of bulk cement into the Port Everglades warehouse. Others in the picture, from left to right, are Mr. Ferre, W. Palmer Van Arsdale, and Harold J. McCormack.

Right: One of the customers receiving bulk cement by truck from Ponce Products, Inc.

Electrical Control—

(*From page 73*)

It has been standard control practice to furnish two or three thermal relays in the starter enclosure. These relays have been designed to approximate somewhat the heating cycle of a motor winding. Normally, this process will remove the motor from the line when the motor insulation reaches a dangerously high level. However, in a crusher application such a standard relay mounted remote from the motor offers little or no overload protection because of the widely varying load conditions. Even though the thermal relay can very successfully follow the heating cycle of a motor when both start out at the same temperature, it cannot follow the cooling cycle of the motor. Since the relay weighs only a few ounces, while the motor may weigh several thousand pounds, the relay, of course, will cool much faster than the motor. Figure 3 illustrates the relative heating and cooling cycles and shows the possibility of eventual burnout of the motor insulation.

Protection Based on Winding Temperature

If proper overload protection is to be obtained for a primary gyratory crusher motor, standard overload protectors must be replaced with or supplemented by special overload devices. One such unit is the bimetallic thermal sensitive overload device located on or near the actual motor windings to be protected. An embedded temperature-sensitive conductor used with a relay may also be employed. Actual temperatures of the motor windings can then be measured, whether on the heating or the cooling cycle. The actual location of the bimetallic element may vary; however, the effectiveness of the unit is not materially altered by any of these standard locations. The bimetallic element is located on the iron adjacent to the coils on some designs of motors up to 200 hp. On larger motors it is located on the motor windings.

Thus full overload protection, with the resultant elimination of expensive motor burnouts and production losses, can be obtained by means of a small additional expenditure.

This overload device can be used in a variety of ways, depending upon the wishes of the plant operator. It can be used to shut down the crusher motor the instant a dangerous temperature is reached; it can be used to sound an alarm which would permit the operator to complete the crushing cycle before shutting down the motor; or it can be connected to an alarm and timing motor which would give the operator a fixed period of time before the drive motor would automatically shut down.

In either of the above examples, the motor will ultimately be shut down. This means a period of time often exceeding one hour before the crusher motor cools sufficiently to allow the overload to reset its contacts so that the motor can be restarted.

An ideal solution to the problem is to have the embedded overload device sound an alarm, warning the operator not to add additional loads. This arrangement would enable the operator to run out the load.

The cooling fans of the motor would then quickly cool the motor to the point where the overload device would reset and shut off the alarm. The operator could then load the machine. This type of protection is used on many marine motors driving vital auxiliaries.

When the crusher is overloaded to the point of stalling, as in Figure 4, it may be desired to disconnect the motor from the line immediately rather than wait for its windings to reach a predetermined temperature.

A wound-rotor motor with starting duty drum and resistors (Figure 5) will not, as a rule, draw over 150 percent of full load motor current during starting. However, if the motor is already started and all of the starting resistors shunted out, the motor will, upon stalling, draw considerably more than 150 percent full load current. To take care of this condition, it is advisable to provide an instantaneous overload relay that is set to trip at some current value higher than 150 percent of full load starting current. This relay is a standard type normally used with current transformers. It would trip out just prior to the point that the motor would stall, thus preventing possible damage to the driven load. It is also effective when an attempt is made to start a partially loaded crusher which requires greater starting torque than the starting torque of the motor. Under this condition the motor is already stalled and the operator is cutting out successive steps of resistance in the wound-rotor circuit with the motor remaining at standstill, which causes the current to rise rapidly. Just as soon as it reaches the relay trip value, the motor will be disconnected from its power source by the relay, which opens the contacts of the motor starter. Additional protection to the motor windings and starting duty resistors is thus provided.

The motor starter and the motor should always be provided with short circuit protection in the form of

(*Continued on page 100*)

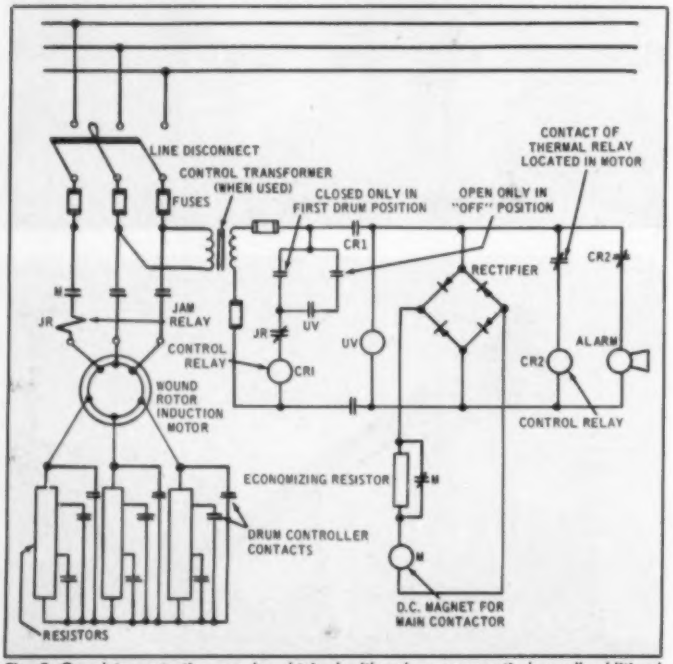


Fig. 5. Complete protection can be obtained with only a comparatively small additional investment.

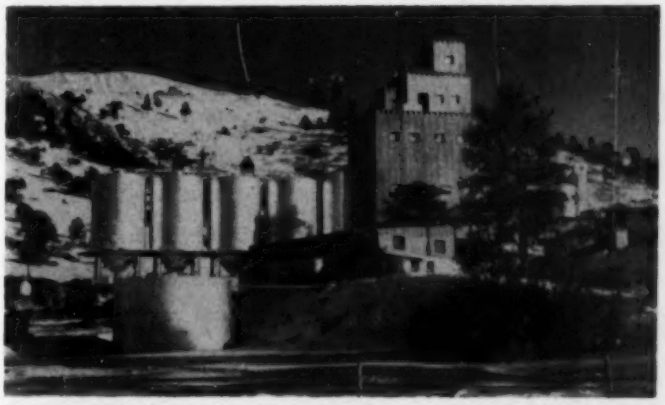
EXPANSION AND IMPROVEMENT MARK GROWTH OF SCHUNDLER PERLITE MINING OPERATION

KEEPING ahead of the rapid expansion of the perltie industry has become the watch-word of the F. E. Schundler Company, Joliet, Ill., miners and processors of perlite ore. The second year of operations at their mines in No Agua, N. M., marks the completion of a large program of expansion and improvement.

The program was made necessary because of the rapid growth of perlite crude ore sales due to the increased usage of the expanded perlite product in industrial and building material markets across the nation.

Of primary concern to Schundler engineers was the development of screening and storage facilities for the several refined grades of perlite ore developed for industrial and specialized plaster and concrete markets. Another immediate problem was the enlargement of mine, transportation, and railhead facilities.

The open-face mining operations were greatly accelerated in 1952 by the purchase of a Le Tourneau Carryall 12-cu. yd. scraper with which to prepare open-face areas. By the close of the year one entire hill was scalped in preparation for benching operations. In addition, exploratory openings were enlarged on six other hill sites which increased proven reserves by an estimated 3,600,000 tons. Two Ford F-7 dump trucks were added to the company's other units to transport the perlite rock from hill site openings to the mill, some 900 ft. lower in elevation.



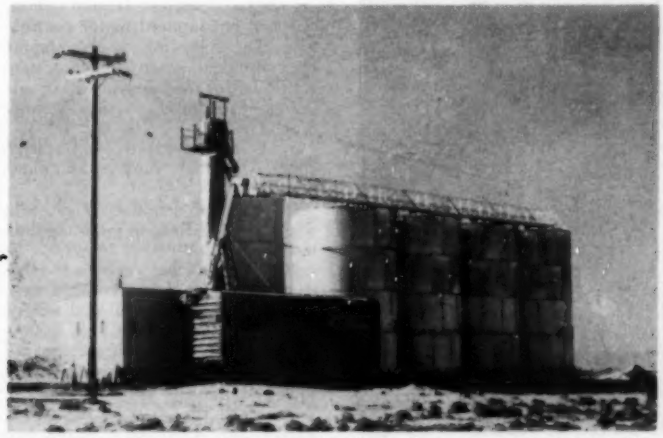
The F. E. Schundler Company's perlite mill at No Agua, N.M., which has been in operation for the last two years.

Two 4- by 10-ft. double-deck Tyler Hum-mer screens were added to the three previously in operation at the crushing mill to permit various sizes of graded perlite to be run simultaneously. A 16- by 21-ft. superstructure was erected on the top of the mill to accommodate these screens. Five Butler hopper-type drive-under bins were constructed at the mill, increasing crude ore storage capacity by 1,200 tons, or twenty-four 50-ton carloads. One bin was designed specifically for the newly developed Schundler PA No. 1 ore, the fines grade in demand for industrial markets. A 60-ft. elevator with 8-in. buckets was constructed for elevation of the new PA No. 1 grade, and a 12-in. screw conveyor 60 ft. long was installed for discharge of ores into the remaining storage bins.

One and one-half miles of new high-level road was graded, ditched, and surfaced from the mill to U. S. Highway 285. In addition, the previously existing road was raised and re-surfaced to provide for increased mine traffic.

The "over the road" transportation to the railhead on the Denver & Rio Grande Western R.R. in Antonito, Colo., consisting of "Trailmobile" 32-ft. semi-trailers attached to Ford F-8 tractors, has been augmented by two Ford F-7 dump trucks.

Railhead facilities have been sharply revamped and greatly enlarged. The Schundler company brought in two miles of power lines from Antonito to provide alternating current for loading operations. Four 22½- by 32-ft. Butler bins were added to storage facilities, increasing track-site storage by 1,300 tons, or 23 carloads. The hopper bin previously in use was widened and reversed and a new 70-ft. gradient ramp was constructed for the large



The Schundler railhead for the shipment of Perlite crude ore, located at Antonito, Colo.

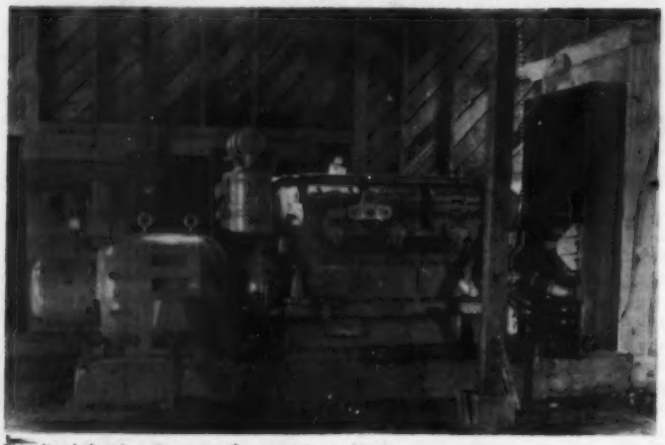
Trailmobiles. Two 16-in. belt conveyors—one 120 ft. long and the other 118 ft. long, were constructed for bin loading. The 118-ft. screw conveyor is driven by a new 20-hp. motor with a conveyor capacity of 70 tons of crude perlite per hour.

For rapid car loading, a Stephens-Adamson slinger was purchased enabling the railhead operation to load a 60-ton car per hour under maximum conditions. The Denver & Rio Grande Western Railroad siding was extended 280 ft., affording a current siding capacity of 10 to 12 cars.

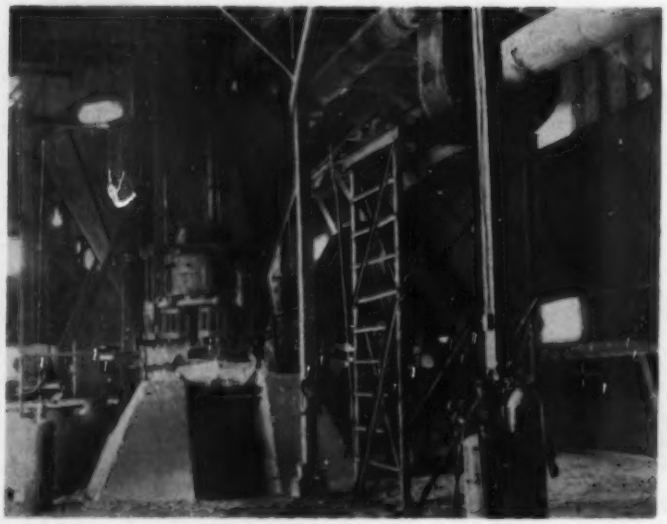
New construction and expansion was engineered and supervised by Schundler's general superintendent, Carl Schulz, assisted by mine superintendent, M. B. Mickelson. The entire program increased mine, mill, and railhead capacity by 50 percent, as well as broadening specified gradings by the addition of three new crude ore products.

In order to further mine research and to insure uniformity to the Perlite Institute's specification, a large amount of equipment was added to the Schundler mine laboratory. Some of the items installed included a Rotap with an automatic timer for exact screen percentages and an improved moisture teller for determining free moisture in perlite ore. Riffling and quartering equipment was expanded greatly.

While Schundler company officials feel that they have kept ahead of the market by their 1952 expansion, the outlook for perlite consumption in 1953 indicates even more construction and enlargement at the mines. Quality standardization affected by Perlite Institute activities and enormous new industrial usages for perlite require constant effort on the part of perlite miners to develop and produce new grades of perlite ore. According to Superintendent Schulz, substantial progress will be accomplished by further mill additions in the coming year.



This diesel-electric unit powers the operation at No Agua.



Perlite ore is crushed in this shorthead cone crusher.

Electrical Control

(From page 98)

fuses or circuit breakers located between the motor starter and the distribution system. Such protection is called for in all national electrical codes and is provided as standard in most localities.

An adjustable time delay drop-out relay is frequently used to restart the crusher motor automatically after a momentary power interruption. If power is not restored within the time delay setting of the relay, the motor must be restarted manually. The relay is usually set so that the starter will not reclose if the motor falls below 50 percent speed. If it is running slower than approximately 50 percent of rated speed, the resultant inrush of current will open the stalled rotor relays or the short circuit protective device. This inrush will be larger than the starting inrush current, because the resistors in the wound-rotor circuit which were in the rotor leads during starting are shunted out once the motor is up to speed.

To protect the motor and machine against load fluctuations, controls generally recommended for machines like heavy crushers or grinders have features beyond those supplied on standard motor controllers. The following devices should be considered when applying new controllers or modernizing old installations with machines having this type of load:

1. D.-c. magnets to keep starter contacts sealed during abnormal voltage dips.
2. Thermal sensitive relay near the motor windings to guard against burnout.
3. Instantaneous overload relay to remove a wound-rotor motor from the line on any load which would stall the motor.
4. Time delay undervoltage relay to restart the motor following momentary loss of power.
5. Fuses or circuit breakers for short circuit protection of starter and motor.

Virginia Paper Mill Operates Highly Instrumented New Kiln To Supply Process Lime

By WALTER E. TRAUFFER

A general view of the new kiln and causticizing departments at the Covington, Va., plant of the West Virginia Pulp & Paper Company. The kiln feed preparation building is in the background; the lime slaking department at the left.

Company pioneered in use of rotary kilns for reburning calcium carbonate sludge

AT one time the paper industry was one of the biggest purchasers of lime. Through the years, however, the industry turned to burning its own lime, and then to recausticizing the white liquor and burning the residue, until now it is one of the largest of the so-called captive lime industries. The West Virginia Pulp & Paper Company was one of the first to do this in rotary kilns, with an installation at its Luke, Md., mill in 1912. The Covington, Va., mill went on the alkaline process in 1920; and in 1925 three rotary kilns were installed for this purpose —one 7- by 120-ft. and two 8- by 120-ft. These replaced some of the original vertical kilns.

In the summer of 1952 these rotary kilns were replaced by an 11- by 350-ft. Traylor rotary kiln as a part of one of the most modern causticizing and burning systems ever installed. This kiln was designed to produce 275 tons of lime daily. At the present time the full capacity of the kiln is not needed, but it has produced over 300 tons daily in a 48-hr. test run. Several of the small vertical kilns are still used to burn lime for other purposes in the mill, but these may later be abandoned and all lime burning may be done in the new kiln.

The West Virginia Pulp & Paper Co. has paper mills at Covington, Va., Charleston, S. C., Luke, Md., Tyrone, Pa., Williamsburg, Pa., and Mechanicsville, N. Y. The first mill, at Luke, Md., was started as a sulphite pulp operation in the 1870's. The Covington, Va., mill was started in 1900 as a sulphite operation and in 1920 went to Kraft and alkaline pulps. Now most of the output at all of the plants is alkaline.

The capacity of the Covington mill is 650 tons of pulp per day—mostly Kraft. About 200 tons of lime is used daily in the process for recausticizing the white liquor resulting from the Kraft process. This system starts out with the cooking of the wood in a mixture of caustic soda and sodium sulphide. The wood used is a combination of Southern pine and hardwoods. The spent liquor from the pulp cooking process is evaporated and burned to produce a solution of sodium carbonate. This solution is then recausticized by lime to produce fresh cooking liquor.

The lime also follows a closed circuit as the resulting calcium carbonate sludge is reburned into lime. From 1 to 2 percent of the lime is lost in the recovery cycle, and this is made up by the addition of the limestone to the sludge as it is fed to the kiln.

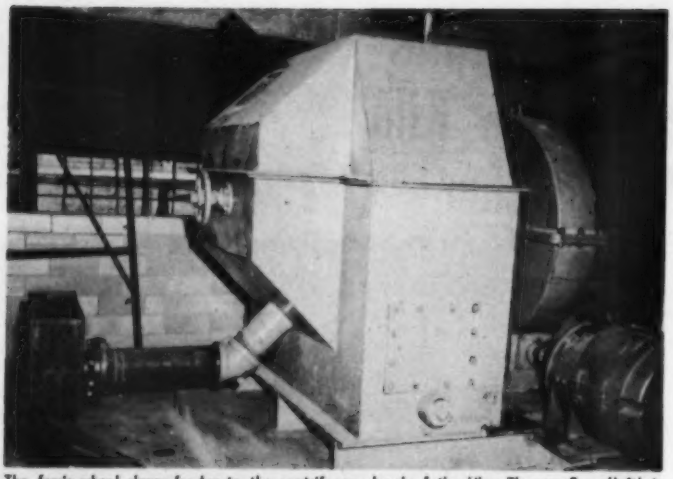
The new causticizing department uses the standard Dorr process. Sodium carbonate solution (green liquor) is used to slake the lime. The slaker rejects are crushed by a hammermill and returned to the system. Six causticizing tanks are used in series to give ample process time. The caustic slurry liquor then goes to the primary or white liquor clarifier. There the mud is separated from the caustic soda, which is then used for cooking the pulp.

The lime mud is then passed through two Dorr washers arranged to give four stages of washing. These remove the caustic soda and chemicals, leaving 1 percent or less of soda as Na_2O in the mud. The slurry is diluted to 30 percent solids and is stored in tanks as kiln feed.

Chemical pumps feed the slurry to a 54-in. Traylor ferris wheel feeder from which the excess overflows back into storage. The slurry is split to a pair of 40- by 60-in. Bird centrifuges (continuous centrifugal filters) which dewater it to about 38 percent moisture before it is discharged into the kiln-feed screw.

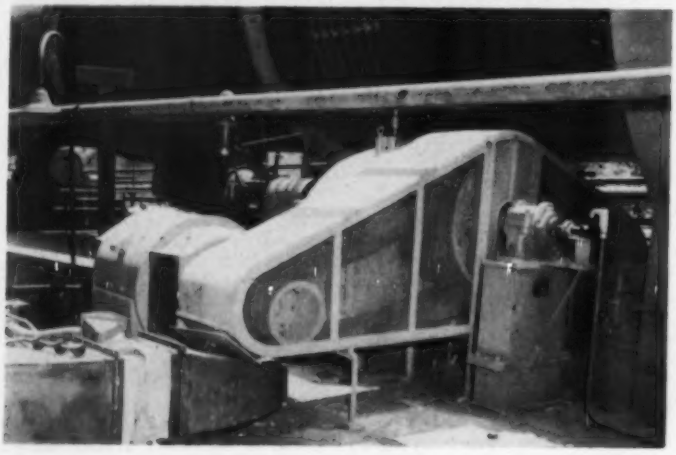
The ⅛- to ⅜-in. washed limestone which is burned along with the sludge is received in hopper-bottom cars. It is discharged into a track hopper from which a 24-in. by 30-ft. belt conveyor and a bucket elevator feed to a 100-ton bin over one of the kiln gas scrubbers. A Traylor table feeder regulates the amount of limestone added to the slurry at the kiln feed screw. Two 20-in. screw conveyors in series feed this mixture directly into the kiln.

The 11- by 350-ft. Traylor rotary



The ferris wheel slurry feeder to the centrifuges ahead of the kiln. The overflow (left) is back to storage.

The two 40- by 60-in. centrifuges which de-water slurry to 38 percent moisture before it goes to the kiln. In the background is the operating panel for the feed end of the kiln.



The gear reducer drive of the kiln, with the auxiliary gasoline engine in the background. The electric motor ventilating duct is in the left foreground. Note the trolley wires for the thermocouples.

kiln is of all-welded construction and is supported by five floating tires on trunnions with water-cooled bearings. The center support is equipped with thrust rollers. The kiln has a slope of ½ in. to 1 ft. and is driven through a Falk gear reducer and gears by a 150-hp. General Electric variable-speed d.-c. motor at a speed of about 1.85 r.p.m. An auxiliary International gasoline engine can be used to keep the kiln rotating in case of electric power failure.

Near the feed end of the kiln is a 60-ft. section of loose-hanging chains to contact the sludge. These are ⅝-in. carbon steel chains totaling 8,000 ft. in length. At the firing end the kiln is lined with 90 ft. of 70 percent alumina brick; then up to the chain section 9-in. high-duty fireclay brick is used. The chain section is lined with 6 in. of Harbison-Walker castable refractory applied with a gun. The firing hood is lined with super-duty fireclay brick.

Natural gas of 1,140-B.t.u. (gross) content is used to fire the kiln through a Peabody Engineering Corp. burner specially designed for rotary kilns. In case of a gas shortage, Bunker C fuel oil can be used with the same burner. Primary and secondary air for burning are provided by two 15,000-c.f.m. American Blower fans, the secondary air being introduced around the end of the kiln air seal. A 100-ft. long flame is projected straight into the kiln and a temperature of 2,100 deg. F. is maintained in the burning zone.

The temperature in the burning zone of the kiln is controlled by a Leeds-Northrup recording pyrometer connected to thermocouples 100 ft. back from the discharge end of the kiln. This control is through regulation of the flow of fuel to the burner. There are two thermocouples opposite each other and inserted through the lining of the kiln. Six trolley wires around the kiln at this point transmit the temperatures—two wires for each of these thermocouples and two for another one at the firing end of the chain section, where a temperature of about 650 deg. F. is maintained. The pyrometer also records the temperatures at the discharge end of the kiln and at the base of the stack.

The ratio of primary air to fuel is fixed by means of linkage between the two valves. The secondary air is controlled by a Hays oxygen an-

(*Continued on page* 112.)

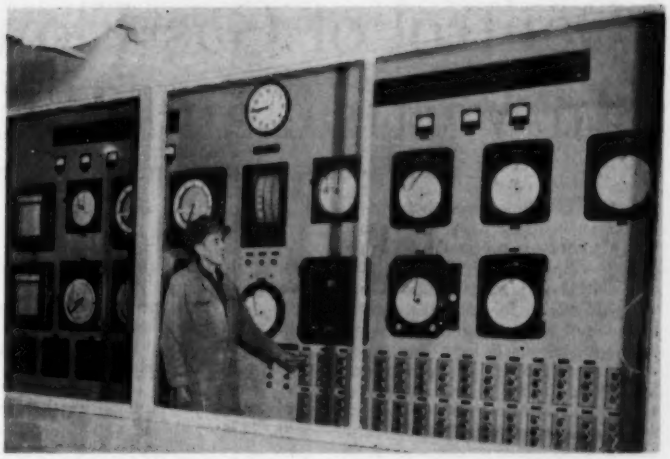
Right: The instrument panel at the firing end of the kiln, which is believed to be the most completely instrumented in the paper industry.

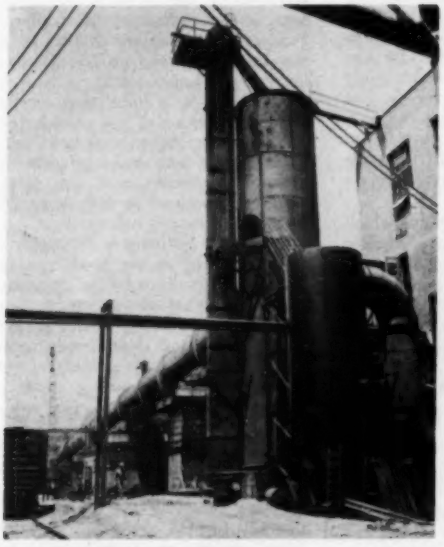
Center, left: The kiln, viewed from the feed end, with gas scrubbers and the feed preparation building. The elevator feeds stone to the bin over one scrubber.

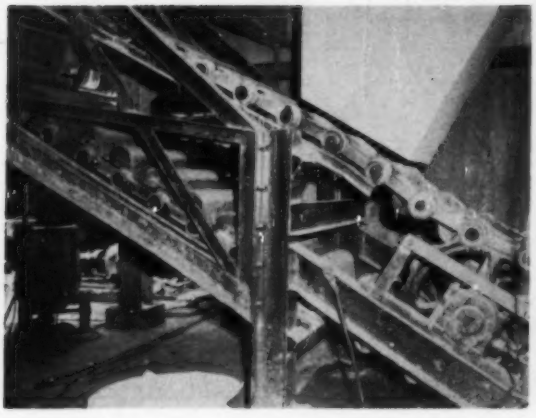
Center, right: A construction view of the kiln draft fan, showing the two 200-hp. drive motors on the same shaft—one 500- and the other 700-r.p.m.

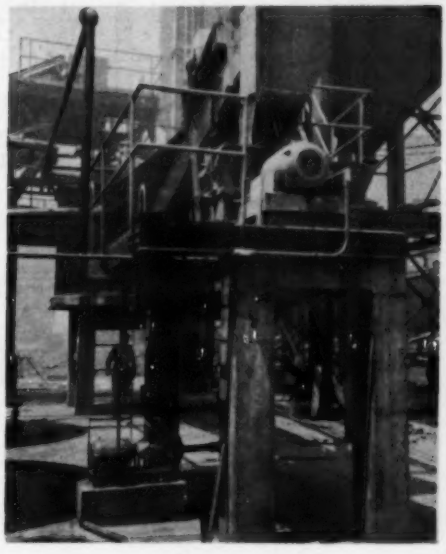
Bottom, left: Discharge from the kiln to the inclined deep-pan conveyor to the slaking department.

Bottom, right: The slaker, which receives lime from the pan conveyor following the kiln. The hammermill is in the foreground.









Control of Gas Flow Patterns In Vertical and Rotary Kilns

PART I — AIR FLOW IN RELATION TO FUEL STREAM FLOW

By WOLF G. BAUER
Consulting Engineer

THE lime manufacturer is one of the very few in the minerals processing fields to employ either or both vertical and rotary kilns. Thus while problems in product control, costs, market, and uses, as well as after-processing of lime are quite similar irrespective of the type of kiln used, operation with these two types of kilns differs considerably, if not basically. Having the annual lime issue in mind, we are anxious to present something of interest to the operator of either type of kiln, and the discussion is therefore based on experience with kilns of both types.

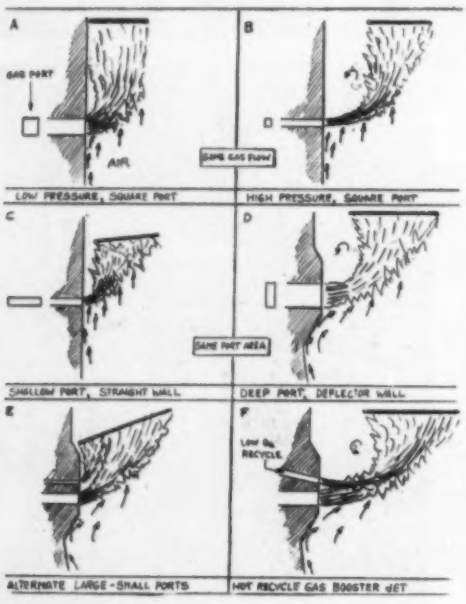
It is probably much easier for most of us to visualize and to become concerned with the travel paths of solid pieces of limestone or lime in these kilns, than it is to envision and understand the behavior of gases. Yet, these gases, whether they flow in streams of fuel, air, or process products, constitute the heating or cooling media; and their paths and flow patterns must be understood in order to bring about changes in technique or design for their control. Seldom is it realized that these gases represent an item several times greater in tonnage than the stone fed to the kilns, and that the control of this large gas tonnage streaming through the system as a heat transfer medium is of prime importance.

Nature of Gas Flow In past articles we have always endeavored to simplify the subject matter at some expense to detail and full coverage, and to discuss only the most applicable and usable features of theoretical formulations. The subject of fluid dynamics is certainly not an easy one. However, in line with the purpose of digests and condensations, we shall try here to inform the busy reader with the minimum of mental effort and time on his part.

Gases and liquids are fluids which follow the same basic laws of flow except that gases are compressible and freely change their density and volume with temperature, pressure, and flow space. Liquids undergo these changes to only a slight degree. All fluids, whether liquid or gaseous, exhibit certain similar characteristics during flow, such as viscous drag and friction effects along the surrounding solid confining flow-channel surfaces, as well as the phenomenon of turbulency, which in turn depends on the ratio of viscosity, velocity, and size of the flow channel.

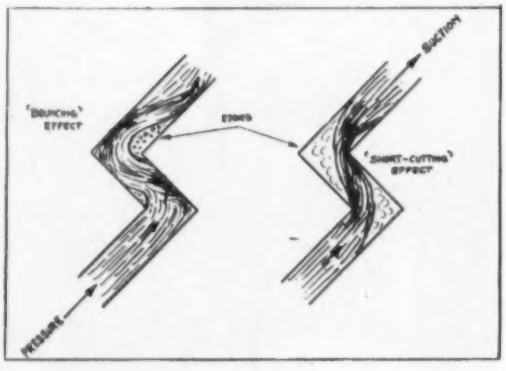
Below a certain critical velocity and above a certain gas channel area, the gas stream flows in so-called laminar or streamline flow, while above this velocity, the phenomenon of turbulency takes effect. Practically all gas flow in kilns is in the turbulent flow range. Turbulency is a relative condition, and it should be kept in mind that erratic and wavy motion of gas particles or masses cannot be seen or even felt, while eddies, jets, and impingement deflection currents, etc., can often readily be noticed as turbulency of a very pronounced nature.

Whenever a stream of flowing gas is diverted by either a change in channel direction or by the opposing force of another gas stream, turbulency and particularly eddies are set up alongside and downstream from the diverting object. Such eddies are a reaction phenomenon in an area or zone in which the normal equilibrium of static and velocity pressures has been temporarily upset (changed from normal ratios). A reversal in flow, as well as spinning vortexes alongside the demarkation line between the gas stream and the eddy, are the usual characteristics; and similar behavior may readily be



Left: Fig. 1. Center or side burner gas pattern control.

Right: Fig. 2. Gas flow pattern in crooked channel.



studied in water streams at lower velocities and higher viscosity. (In technical language, at equal Reynold's number ratio.) Since the total energy of a gas in motion remains constant, the slowing down of the stream or a section thereof lowers the velocity pressure and correspondingly increases the static pressure. That is as far as we need to go for the particular purpose of this discussion.

One of the characteristics of fluid flow often overlooked in kiln system design is the change in flow pattern when the fluid is under "tension" and when it is under "compression." Changes in velocity are due to changes in flow channel cross-section under constant pressure-volume conditions, the gas stream accelerating as the channel area decreases, and decelerating as it enlarges. We can prove this phenomenon to ourselves by using water as the fluid in a glass. By taking a straw into our mouth and sucking water out of the glass, little motion or disturbance of the water in the glass is noticeable. On the other hand, if we push the water down the straw again into the water in the glass, turbulent commotion is at once apparent. Water entering the bottom of the straw is under tension and acceleration, while water leaving the bottom of the straw is under pressure and deceleration. Similarly with gases. Whenever a high-pressure or high-velocity stream of gas is slowed down by expansion into another gas, or by impact friction on solid surfaces, both static pressure and turbulency rise.

Fuel Gas and Air Flow Pattern In Vertical Kilns In shaft kilns the pattern of gas flow is considerably modified and influenced by the size and movement of the particles of stone or lime, and by the shape of the kiln cross-section. For the purpose of this discussion, these variables will be disregarded.

In modern high-tonnage, high-draft shaft kilns fired with natural or producer gas, the combustion air stream flows up vertically from the cooling section to be mixed with the fuel gas streams flowing horizontally from center or side burner ports (or both) into the air stream. Conditions for projecting these two types of fuel gases into the rising air current vary considerably. Producer gas is of low B.t.u. content, greater stream volume, and under relatively low pressure; while natural gas is of high B.t.u., lower volume, and high pressure. Air velocities also differ with these two types of fuels, less air and hence lower air velocities obtaining in producer-gas-fired kilns than in natural-gas-fired kilns.

As kiln designers, we have two objectives to reach: maximum gas penetration and distribution into the kiln charge, and control over uniformity of heat generation through fuel and air stream regulation and pattern development throughout the kiln cross-section. These are often basic problems in fluid dynamics.

An increase in draft and air velocity up the kiln will increase the vertical gas-deflection component to the point where maximum horizontal gas penetration is reached only high up in the kiln. With fixed kiln heights, this limits the gas and air flow values in maintaining a suitable hot zone level. Three proven expedients for maximum gas penetration and optimum distribution of the fuel streams may be presented here, their use being governed to some extent by the type of gas used. These design and operating changes are particularly useful when increasing kiln capacity with a dense type of stone charge and wide cross-section kilns.

1. *Gas port shape.* A wide, shallow port allows the gas to issue in a relatively thin band, easily penetrated and dispersed by the air from below, while a round, square, or deep port gives deeper horizontal penetration into the charge and rising air current. Early dispersion means early ignition and shorter heating zone at higher temperature.

2. *Gas port size and arrangement.* If all ports at one level or in one row are of the same size, penetration and gas flow end point is concentrated to a relatively narrow band or limit zone. This may be advantageous where such concentration of heat is to compensate for uneven downtravel of the charge. However, independent alternate port control should be used to produce a second shorter heat generation zone at less penetration or distance from the port area. See Figure 1-E. This concentration or banding of heat in rather narrow zones is typical of high-draft kilns fired with single-size ports.

3. *Hot waste gas reenforcing streams.* By jetting recycled hot waste gas of low oxygen content parallel and immediately above or below the fuel gas streams as they issue from their ports, the fuel gas can be projected into a better distributed pattern, and to a greater penetration distance. Experience with this practice has also shown further temperature control advantages.

The fact that air and gases have a tendency to flow toward the kiln lining or walls is fairly well acknowledged by most operators, yet few have succeeded in doing much about it in either kiln and burner design, or in operating technique. Careful design attention to lining shape, especially above and below the gas ports, as well as to air inlet point in the cooler and gas outlet takeoff in the kiln top, does much to inhibit this tendency. Distribution of stone in the charging arrangement is another point that often requires checking and corrections.

Air Flow To Rotary Kilns There are many places and many reasons for controlling the air and gas flow in rotary

(*Continued on page* 116.)

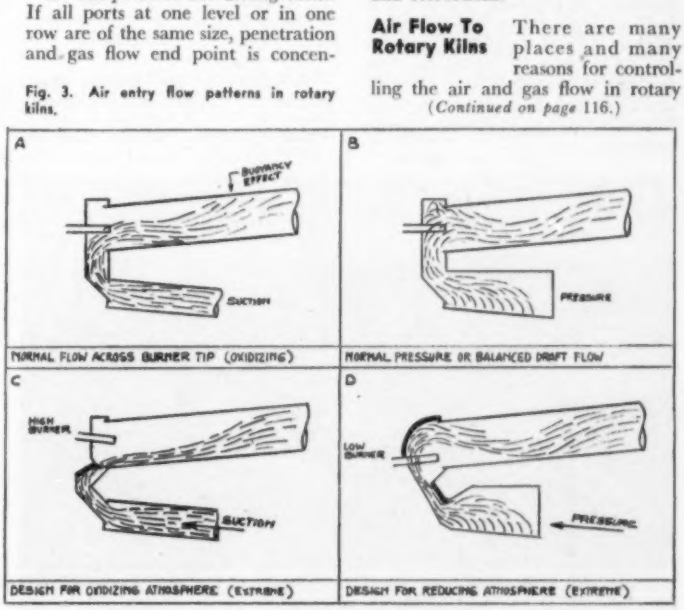


Fig. 3. Air entry flow patterns in rotary kilns.

Analcime—an Undeveloped Nonmetallic Mineral and Rock

another P&Q first exclusive

THE recent finding of large, commercial-size quantities of analcime places that mineral in a position to attract the attention of producers, technologists, and manufacturers of nonmetallic earth products. Al-

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University of Missouri
Columbia, Missouri

though analcime has been known by mineralogists, it has previously been considered more or less a museum curiosity because no deposits large enough to quarry commercially had been known. Consequently, uses have not been explored or developed for it, and the field is wide open. Thousands of tons of analcime rock in a variable range of purity lie at the earth's surface on and near railroad transportation in Wyoming.

Analcime, when pure, is a clear to white crystalline mineral substance having a hardness (5 to 5.5) between limestone and feldspar. It is a compound of silica, aluminum, and soda, with combined chemical water, having the chemical formula $NaAlSi_2O_6 \cdot H_2O$. Impurities commonly include small amounts of iron oxides, silica (quartz), limestone or dolomite, and titania. Potassium is commonly present as 2 or 3 percent K_2O in place of the sodium, a quantity which may be significant. An analysis* of a cleaned lump of crude analcime rock from a locality near Maverick Springs, Wyoming, is given herewith:

A cliff of analcime rock 60 ft. high along the Middle Fork of the Popo Agie River. The fencepost (upper right) is anchored to a large boulder of dark sandstone. Locality, sec. 3, T. 32 N., R. 100 W., 5 miles southwest of Lander, Wyo.

SiO_2	56.07
Al_2O_3	19.34
Fe_2O_3	3.58
TiO_2	0.49
MgO	0.36
CaO	0.64
K_2O	3.47
Na_2O	8.24
Loss Ig.	7.50
CO_2	0.18
SO_3	None
P_2O_5	0.10
Total	99.97

Reference to the analysis shows almost 3.5 percent K_2O (potash), and over 8 percent Na_2O (soda). The alumina content is about 19 percent and silica above 55 percent. Analcime is a zeolite, a class of minerals which possess the property of base-exchange, which is exhibited to a marked degree by water-softener resins and permutits.

Zeolites are typically soluble in acid to give silica gels and release the other constituents in solution. These properties common to zeolites should be considered in exploring possible uses of analcime.

Analcime, when heated in a mineralogist's blowpipe, fuses readily to a clear glass, except for color due to impurities. The large content of alkali metals (Na and K) is probably responsible for the fusibility of analcime.

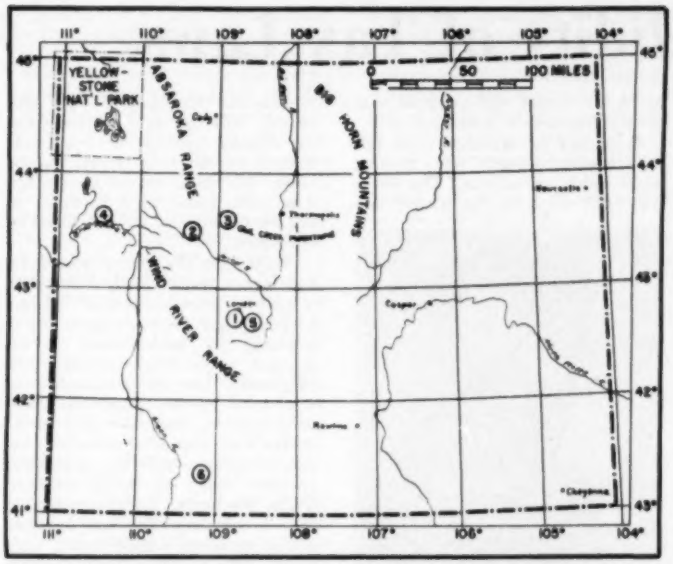
Some of the analcime is found mixed with calcite, $CaCO_3$, and dolomite, $CaMg(CO_3)_2$, which give off CO_2 gas when heated. Such a mixture might bloat more extensively than purer analcime, but it should be repeated that the writer has not made actual tests.

Other properties of analcime which might be turned to applied uses may occur to technologists after studying the composition of the material and working with it in experiments.

A focal point in the occurrence of analcime rock in Wyoming is at Lander, in Fremont County, in the west central part of the state. Lander is served by the Chicago, Burlington, and Quincy Railroad, and

* Analysis by Bruce Williams Laboratory, Joplin, Mo.

A gravel-strewn slope several miles long, behind and under which lies analcime rock. This view was taken across the river from the photograph above.



Map of Wyoming, showing the locations of six analcime rock occurrences. Locality 1, on Popo Agie River, 5 miles suthwest of Lander; locality 2, near Dubois; locality 3, Circle Ridge and Maverick Springs Oil Fields; locality 4, on Gros Ventre River above Moose; locality 5, Derby Dome Oil Field; locality 6, subsurface near Rock Springs.

by paved national and state highways running north-south and east-west.

The analcime-bearing strata occur in what is known geologically as the Popo Agie (pronounced Popo'zhie) member of the reddish Chugwater formation. The analcime beds, in varying degrees of purity, range up to 60 ft. in thickness in the Lander region. One outcrop lies within a stone's throw of the railroad, and even more extensive deposits crop out in a long, gently sloping hog-back ridge about 5 miles southwest from Lander. This ridge lies on a good country road which follows the wide valley of Middle Fork of the Popo Agie River on the northeast flank of the Wind River Mountain Range, before it emerges from Sinks Canyon. Erosion has removed almost all overburden from these surface outcrops of the analcime beds, which dip gently under the flat plains surface. See photographs 1 and 2, which were taken near the type locality at the "old State Experimental Farm" in sec. 3, T. 32 N., R. 100 W. Millions of tons of analcine rock are available in this region.

Additional areas of analcime outcrops are found about 12 miles southeast of Dubois, Wyo., on U.S. Highway 287, thickness 60 to 70 ft.; at Derby Dome Oil Field, 13 miles southeast of Lander, thickness 25 or more ft.; and at Circle Ridge and Maverick Springs Oil Fields on the southwest flank of the Owl Creek Mountains, thickness in excess of 40 ft. The analcime-bearing beds are, or were, probably continuous across the intervening areas. See Localities 1, 2, 3, and 5 on the accompanying map of Wyoming.

The same analcime-bearing formation has been recognized in the sub-surface rocks near Rock Springs, Wyo., at Locality 6, and more recently it has been identified many miles to the south, across the Uinta Mountain Range, on the south flank a few miles north of Vernal, Utah. Other exposures of the Popo Agie formation are known to geologists who are familiar with the rocks of Wyoming.

The analcime rock is tough and hard. It would crush probably about like a silty limestone. It does not slake or mud-up like a soft shale or clay. Presumably it could be crushed readily to fine particles preparatory to heat processing or other treatment. It occurs in beds in lenticular or wedging color zones. Certain of these beds weather to nodular-shaped boulders. See photograph below.

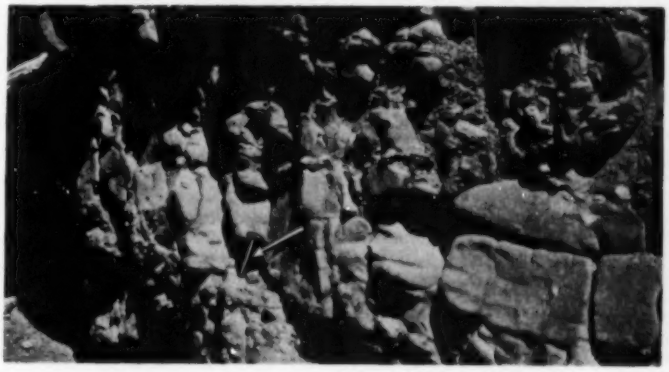
The analcime beds are colored soft pastel shades of red, yellow, olive drab, purple, or gray. They are fine to rough in texture. Much of the analcime rock is oölitic, a term applied to small, rounded, "fish-egg" or "bird-shot" structures in the rock. See cut on page 120, which has an inch rule alongside for scale comparison.

Pictures of these oölites as seen under a microscope are shown in the photomicrographs on page 120. B shows very fine-grained silica (quartz) silt particles clumped in oölitic aggregates.

This article describes the composition, occurrence, distribution, and lithology of newly recognized, large deposits of analcime rock. It suggests a few possible uses for it, but makes no claim that any of them is feasible. Perhaps far more, unthought-of uses for it can be discovered. Until the processing of vermiculite, perlite, wool rock, bloating shale, nepheline, and the many other useful nonmetallic rocks and minerals was developed by technologists, those rocks were geological oddities. What is the future for analcime? Not the crystal ball, but technology and economics will tell in a few years.

Articles on analcime written in more technical geological, mineralogical, and chemical language include the following: *Analcime in the*

(*Continued on page* 120.)



Analcime rock weathers to blocks, nodules, and boulders. The arrow points to a hammer with a 1-ft. handle on a ledge near the center of the picture.

The Validity of Tax Laws

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

NOT long ago I received a letter from a reader, as follows: "For many years I have been a regular reader of your legal articles in PIT AND QUARRY. These articles are a great boon and assistance to persons who want to solve their legal problems, and prepare to assist their lawyers to win unavoidable suits. One legal subject which you have neglected in the past is a review of taxation law suits. I mean suits that involve taxation of plant owners and sellers of nonmetallic (mineral) products. It seems to me this kind of article would be interesting. I know I should like to read such an article."

After reviewing hundreds of leading higher court decisions, I selected the following leading cases as those which I consider the most important and interesting recent taxation suits. . . . This article comprises a concise review of the causes and outcomes of late and leading higher court law suits which directly and indirectly affect taxation and licensing of buyers and sellers.

Supreme Court Broadens Taxing and Licensing Powers

Recently the Supreme Court of the United States rendered an unusually interesting and far reaching decision which ultimately can importantly affect both sellers and purchasers of nonmetallic mineral products.

Since the early decision of *Robbins v. Shelby County Taxing District*, rendered in the year 1887, 120 U.S. 489, the Supreme Court of the United States has held that the process of solicitation sales of merchandise in interstate commerce can not be subjected to taxes or licenses or bonding requirements.

The following late higher court decision which sharply distinguishes solicitation of interstate business is *Breard v. City of Alexandria, La.*, 71 S. Ct. 920. A city in Louisiana passed an ordinance, as follows:

"Be it ordained . . . that the practice of going in and upon private residences . . . by solicitors, peddlers, hawkers, itinerant merchants or transient vendors of merchandise not having been requested or invited so to do by the owner or owners, occupant or occupants of said private residences for the purpose of soliciting orders for the sale of goods, wares, and merchandise is declared to be a nuisance and punishable as such nuisance as a misdemeanor."

A solicitor for imitation stone siding, named Breard, was arrested while soliciting business. The arrest was made solely on the ground that

Leo T. Parker

he had violated the ordinance because he had not obtained the prior consent of the owners of the residence solicited. Breard, a resident of Texas, was in Louisiana to solicit business.

Breard appealed to the higher court on the grounds that the city ordinance is void and invalid because it violates the Due Process Clause of the Fourteenth Amendment of the Federal Constitution; that it violates the Federal Commerce Clause, article 1, section 8, clause 3; and that it violates the guarantees of the First Amendment of freedom of speech and of the press, made applicable to the states by the Fourteenth Amendment to the Constitution of the United States.

The Supreme Court of the United States upheld the validity of this unusual city ordinance, and said:

"Unwanted knocks on the door by day and night are a nuisance or worse to peace and quiet. The local retail merchant, too, has not been unmindful of the effective competition furnished by house-to-house selling in many lines. As a matter of business fairness, it may be thought not really sporting to corner the quarry in his home and through his open door put pressure on the prospect to purchase. To the city council falls the duty of protecting its citizens against the practices deemed subversive of privacy and of quiet. We think those communities that have found these methods of sale obnoxious may control them by ordinance."

Hence, the decision rendered by this higher court clearly holds that privacy of home owners is "all important", and although Breard was soliciting for merchandise to be shipped in interstate commerce to purchasers, yet, the ordinance was held valid. Quite apparently under this decision, intrastate city ordinances may now affect and even stop salesmen from soliciting interstate business from all home owners. Quite obviously, it is conceivable that this decision may lead to other broad decisions which could ultimately stop salesmen from soliciting interstate business from purchasing agents in their offices, if it were decided that such salesmen are nuisances, or that they usurp too much of the valuable time of purchasers. Mr. Chief Justice Vinson, with whom Mr. Justice Douglas joined, rendered dissenting opinions, saying:

"I dissent and would reverse the judgment below without reaching all of the issues raised, for, in my opinion, the ordinance constitutes an undue and discriminatory burden on interstate commerce. In my view, the ordinance is a flat prohibition of solicitation."

With respect to the protection of privacy in private homes this dissenting Chief Justice said:

"That this ordinance, on its face, professes to protect the home does not relieve us of our duty to weigh the practical effect of the ordinance upon interstate commerce. Lack of discrimination on its face has not heretofore been regarded as sufficient to sustain an ordinance without inquiry into its practical effects upon interstate commerce. No one doubts that protection of the home is a proper subject of legislation, but that end can be served without prohibiting interstate commerce."

Nevertheless, and notwithstanding these dissenting opinions, the law now is: A state or city can prevent salesmen from soliciting interstate business if the state statute or city ordinance is properly formulated.

Right of Taxation

Considerable discussion has arisen from time to time over the legal

question: "How can one determine with dependability whether a tax law is valid? What legal rules can a buyer or seller of nonmetallic (mineral) products use to know whether a tax law is valid and enforceable?"

The answer to these two questions are important because no business person can expect to win a suit if he has in the past conducted his business in direct violation to valid tax laws. On the other hand, if the tax law in controversy is invalid, a different situation arises. Hence, it is important for readers to have at hand a guide for the purpose of reference to determine whether a tax law is valid or invalid.

First, it is important to know that in construing the constitutionality of a state legislative tax law, the intent of the legisltaure or law making body must be ascertained from the language of the entire law. Every presumption is in favor of the constitutionality of the law, and a court will not declare it unconstitutional unless it is satisfied, after careful consideration, that the tax law conflicts with some other provision of the state or federal constitutions. If the tax law is reasonably susceptible of two different constructions, one of which will render it constitutional and the other unconstitutional, the former construction must be adopted.

It is possible under modern court holdings that the same tax can be held valid as a property tax against one taxpayer, as a privilege tax against another, and as a combination property and privilege tax against a third person. A state legislature has a wide latitude within the limits of the constitution to pass valid tax laws which benefit the state. The same rule of law is applicable to tax exemption laws.

For example, in *Byrd v. Larrimore,* 47 S. E. (2d) 728, a state law was litigated which provides that any and all manufacturing enterprises hereafter "locating in either Charleston or Georgetown or York Counties", and the capital stock of which is not less than $300,000 shall be exempt from the payment of county taxes for a period of ten years".

On the faith of this law a corporation erected and put into operation in Georgetown County a large plant at an original cost of $8,140,000. Later a subsidiary corporation succeeded to all property, rights, privileges, powers, franchises, and other interests of the first corporation and spent an additional $12,330,000 for additions and improvements to the plant.

Certain taxpayers in the state filed suit and asked the higher court to declare the above law void because it exempted private corporations from paying taxes, and the state constitution gives the state lawmakers no such authority. It was argued that while the state may exempt public utilities from payment of taxes, it could not exempt private corporations.

Nevertheless, the higher court held the law valid and said:

"The General Assembly has a right to pass such legislation as in its judgment may seem beneficial to the state. . . . It has always been, and is now, the law that the General Assembly may enact any act it desires to pass, if such legislation is not expressly prohibited by the constitution of this state or the Constitution of the United States."

Valid Tax On Movables

Here are interesting tax questions presented to the writer personally in various forms by readers:

"What right has a state to tax movable property belonging to an individual, firm or corporation whose principal place of business is located outside the state? Can a state tax motor trucks and other vehicles occasionally sent into the state from another state in which their owner has his principal place of business?"

The higher courts consistently hold that property, motor vehicles, cars, boats, and the like sent into a state by a nonresident must bear its fair share of the burden of taxation, although such property is only temporarily located within the taxing state.

For example, in *District of Columbia v. Smoot Sand and Gravel Corporation,* 184 Fed. (2d) 987, the testimony showed facts that a corporation purchased tugs, scows, and launches which are used for the transportation of sand and gravel from Virginia to purchasers in the District of Columbia.

In subsequent litigation the higher court held that the District of Columbia could tax the equipment, vessels, etc., on a fair apportionment valuation based on the number of days each year the vessels transported sand and gravel to storage places in the District. This court said:

"Permanency in the sense that it must be fixed like real property is not essential to the establishment of a taxable situs for personal property."

For comparison see *Queen City Company v. District,* 134 F. (2d) 44. Here a corporation from Maryland sold its products to a purchaser and distributor located in another state. The distributor would send his trucks to Maryland for the products and transport them into the other state. The corporation had no office or other place of business in the latter state; and had no interest in the business of the distributor.

Under these circumstances the higher court held that the state into which the products were transported could not tax the corporation's personal property, such as motor trucks and other equipment.

Road Tax Valid

On the other hand, the higher courts very consistently hold that a state may tax all vehicles whether used in interstate or intrastate commerce. In other words, the higher courts consistently hold that a state has supreme power over its highways, and may regulate or entirely prohibit the use thereof by both interstate and intrastate carriers. See notes, 87 A. L. R. 735, 81 A. L. R. 1415, 56 A. L. R. 1056.

Also, see *Rocky v. Cochran,* 290 N. W. 296. Here a purchaser who used motor trucks to transport merchandise through different states challenged the validity of a state taxing law on its vehicles as infringing upon and transgressing federal safeguards and constitutional restrictions because the taxation law was so high that he could earn no profits.

The higher court upheld the validity of this state law and said:

"It is no longer open to question that the states have constitutional authority to exact reasonable fees for the use of their highways by vehicles moving interstate. . . . If the compensation fixed for the use of the highways is such that the realtor does not so manage its business as to make a profit, it cannot ask that the state forego its right to compensation for the use of its highways for business purposes."

Although the higher courts hold state tax laws of this nature valid, similar city ordinances generally are void.

For example, in *Western Transports, Inc. v. City of Cheyenne,* 120 Pac. (2d) 590, it was shown that municipal authorities passed an ordinance requiring payment of high license fees by all owners of motor trucks which passed through the city. In holding the ordinance void, the court said:

"If the owner or driver of a motor vehicle could be held up and made to pay a license fee or tax by the authorities of every city, town, and village he visited or passed through, it would be impossible for anyone to use or operate a motor car for the purposes for which it was purchased or intended and ordinarily used."

Discriminatory Laws

Modern higher courts consistently hold that a state discriminatory tax law is void and invalid.

For illustration, in *Toomer v. Witsell*, 68 S. Ct. 1156, the Supreme Court held a state law void which required nonresidents to pay license fees 100 times as great as residents must pay. This court went on to explain that a reason the law was being declared invalid is that no proof was given that the cost of enforcing the law against non-residents was greater than the cost of enforcing the law against residents of the state.

Also, see the leading case of *Foster-Fountain Packing Company v. Haydel*, 278 U. S. 1. Here the Supreme Court of the United States decided that a state law was void which prohibited the shipment of products from one state into other cities unless the shippers especially prepared the products for shipment.

Avoids Taxation

A review of late and leading higher court decisions discloses that products and merchandise for which a purchaser has a prior contract is not taxable by a state into which the merchandise is transported.

For example, in *Gay v. United Company*, 32 So. (2d) 600, the testimony showed that a company (seller) in Texas entered into contracts with purchasers in Florida for the sale of its products. The seller transported the products in continuous and uninterrupted interstate commerce from Texas through Mississippi, Louisiana, and Alabama into Florida.

The higher court held that Florida could not compel the company (seller) to pay a tax to Florida, and neither could Florida tax the products before delivery to the purchasers.

This court decided that the company (seller) need not pay the State of Florida a privilege tax on its gross earnings, because, in the first place, the merchandise was sold before starting on its journey from Texas to Florida; second, the merchandise was transported without stoppage or interruption from Texas to the purchasers in Florida.

For comparison, see *Simpson v. Hara*, 268 N. W. (2d) 809. Here the testimony showed facts as follows: Orders or contracts of sale for merchandise were given by purchasers to the seller in his office in Detroit. These contracts of sale contained a clause to the effect that the orders were subject to acceptance at the seller's home office in Chicago, and title to the goods passed immediately upon delivery of the merchandise to the common carrier.

The higher court refused to allow the state of Michigan to tax the orders for merchandise, saying that the sale is not made in Michigan.

For opposite holding see the United States Supreme Court cases as follows: *Illinois Company v. Public Service Company*, 314 U. S. 498; *State Tax Commission v. Interstate*, 284 U. S. 41; and *Ozark Corporation v. Monier*, 266 U. S. 555.

These courts held that transactions are intrastate and not interstate, whereby a state may tax merchandise delivered into the state, if the testimony shows these facts: (1) That the contract between the seller and purchaser is not a contract for the sale of merchandise but an agreement to sell; (2) or the agreement is to sell and deliver merchandise for resale; (3) or a sale is not consummated until the merchandise is delivered in the state; (4) or an obligation to pay for the merchandise does not arise until consumed by the purchaser; (5) or the contract of sale is not completed until the merchandise is delivered to the purchasers in the state or the flow of merchandise is interrupted during transportation from one state into the state wherein the purchasers are located.

It is true, of course, that transactions are intrastate, and subject to taxation, if merchandise is transported into a state and held there until it is sold. On the other hand, the Supreme Court of the United States has held that if a contract exists by which merchandise is definitely sold, the merchandise may be transported into a state and held at a common point as a warehousee, awaiting delivery on the previously made contracts without changing the character of the transactions from interstate to intrastate. See Peoples, 270 U. S. 550.

Law of Salesmen

It is important to explain that no state or city taxation law is valid which in any manner taxes interstate commerce. The legal definition of "interstate commerce" is the transaction of business between citizens of different states when no distinct part of such transaction is completed in any one state.

For example, if a salesman takes on order and then sends it to his employer in another state for shipment, this is interstate commerce. But if a salesman takes an order and then immediately delivers it to the purchaser, this is intrastate commerce and the salesman can be compelled to pay a state or city license tax for soliciting or selling merchandise. Also, the salesman's employer can be compelled to pay sales tax to the state in which the merchandise is sold. Moreover, a consumer or a user of the merchandise can be compelled to pay a "use" tax to the state. And the purchaser must pay personal property tax on the valuation of the merchandise.

Validity of Use Tax

It is well established law that a state law is valid which taxes a purchaser for the privilege of owning or using purchased merchandise. Such a tax law of this nature does not in any respect interfere with interstate commerce, because the tax is applicable after interstate commerce is at an end. See *Pacific, 306 U. S. 182;* and *Henneford, 300 U. S. 577.*

Notwithstanding these decisions, in favor of state use taxes, a state can legally assess "use" taxes only on the actual value of the material used in the state.

For example, in *Gray Company v. Evatt*, 16 Ohio Supp. 151, a company located in Tennessee took a contract to furnish the labor and materials necessary to complete marble and glass work in a building in Ohio.

The Ohio authorities contended that the company was liable for payment of "use" tax on the complete contract price of $48,883.

The higher court refused to agree with this contention, holding that the company was liable for payment of "use" tax on only the actual value of the material used on the job.

Purchasers Must Pay Sales Tax

Recently the Supreme Court of the United States rendered an important decision holding that either a state law or a city ordinance is valid which clearly and broadly requires purchasers to pay sales taxes on merchandise purchased in the state, although such merchandise is shipped in interstate commerce from a seller in another state.

See *McGold v. Berwin*, 309 U. S. 33. Here the testimony showed that a corporation in Pennsylvania took orders for nonmetallic mineral products from purchasers in New York. The products were shipped to the purchasers from the seller in Pennsylvania.

The Supreme Court of the United States held a New York city ordinance valid which required the purchasers in New York to pay a 2 percent tax on the amount paid the seller for the products shipped from Pennsylvania. Also, see *Comptroller, 309 U. S. 70.*

Twelfth Vermiculite Institute Meeting Held at Edgewater Park, Miss.

THIS year the annual meeting of Vermiculite Institute, Chicago, was held at the Edgewater Gulf Hotel in Edgewater Park, Miss., March 23 through 26. It was attended by industrialists from all parts of the nation and from Canada. There was also a delegate representing Hawaii and one from Japan. Many of the members and their wives toured New Orleans before going on to Edgewater Park.

The theme of the meeting was vermiculite application, with emphasis on quality workmanship in the finished job.

"Our industry is concentrating on the vermiculite job the customer buys," C. A. Pratt, president of the institute explained. "We're also interested in new mechanical equipment to install certain vermiculite products, which will mean lower costs."

R. W. Sterrett, president of Southern Zonolite Company, Atlanta, Ga., described short-span precast vermiculite concrete roof tile and showed a film on its installation. This new lightweight slab combines insulation with structural strength and is designed for use over bar joists and bulb tees, Mr. Sterrett said. Since the under-side of the slab has an attractive finish, an additional ceiling is unnecessary, he added.

M. G. Quayle of Zonolite Company, Chicago, reviewed the relatively new vermiculite-sand concrete, and pointed out that a wide range of concrete can be obtained by varying the quantities of sand and vermiculite.

J. B. Lyall, newly-elected president of the Vermculite Institute.

"Our new 1:3:2 mix of vermiculite-sand concrete is showing considerable promise," Mr. Quayle stated. "It weighs half as much as sand concrete, has four times more insulating value, and when it's used over 24-in. center joist spacing, it will carry from 15 to 23 times more live load than the 80 lb. per sq. ft. required for many light occupancy buildings." This concrete makes an excellent lightweight floor fill also, Mr. Quayle added.

H. W. Steiff, vice-president of Western Mineral Products Company, Minneapolis, Minn., discussed air-placed vermiculite concrete.

"Construction engineers have been seeking an economical way of insulating and fireproofing steel structures," Mr. Steiff said. "A more economical way of insulating masonry buildings for industrial and commercial use is needed. And much concern is being shown for a more practical way to insulate steel tanks. The solution to these problems is air-placed vermiculite concrete. It combines superior insulating and fireproofing properties with light weight, strength, durability, and low cost. It is also non-corrosive to steel."

D. C. Goff of the Zonolite Company, Chicago, discussed vermiculite concrete underground pipe insulation. Many installations of the material have been made all over the United States, Alaska, and abroad, Mr. Goff stated.

Stanley K. Robinson of F. Hyde & Company, Montreal, Que., reported on a new vermiculite-asphalt roof fill. This consists of expanded vermiculite granules mixed on the job with special asphalt which binds the material together into a tough, flexible mat. The fill can be quickly poured in any shape or thickness and in any weather permitting men to work on roofs, thereby eliminating costly construction delays, Mr. Robinson asserted.

The guest speaker, James C. Downs, housing and redevelopment co-ordinator of the City of Chicago, predicted that the high volume building activity of the last few years will continue in the year ahead.

"There has been much talk about a decline in the demand for new houses that is belied by the facts," Mr. Downs declared. "More people want new homes today than ever before in the history of our country.

Representatives from all sections of the United States, Canada, Hawaii, and Japan attended the twelfth annual meeting of the institute, held at the Edgewater Gulf Hotel, Edgewater Park, Miss.

We are stepping up the destruction of old housing through our programs of slum clearance, urban redevelopment, highway construction, and public works. We're experiencing a 20th century revolution in industrial and retail merchandising that is reflected in radical changes in the design of buildings occupied by manufacturers and retailers."

C. H. Wendel, president of California Zonolite Company, Los Angeles, Calif., described the use of a new plaster pump to spray on vermiculite acoustical plastic. The material is fireproof, and several pleasing textures can be secured with this machine application, Mr. Wendel said.

Dayton L. Prouty, vice-president of Zonolite Company, Dearborn, Mich., reported on the activities of the institute's plaster committee and pointed out that vermiculite continues to lead the field in lightweight plaster fireproofing. According to the speaker, many fire tests have been

M. G. Quayle, the Zonolite Company, Chicago, who discussed the new vermiculite-sand concrete.

run during the last year on vermiculite plaster fire protection, and more are in prospect. *Lightweight Champion,* the institute's new plaster film, has been shown at many meetings of architects, contractors, and builders, and has been well received.

Other speakers included the following: A. T. Kearney and D. J. Boone of the Zonolite Company, Chicago; L. G. McDiarmaid of Insulation Industries, Ltd., Vancouver, B. C.; J. A. Kelley, Carolina Vermiculite Co., Travelers Rest, S. C.; and Dr. G. E. Ziegler, laboratory research director, Evanston, Ill.

J. B. Lyall, vice-president of Vermiculite-Northwest, Inc., of Spokane, Wash., was elected president of the institute. "Discussion at the convention showed that processors of raw vermiculite are planning to step up production to new high levels," Mr. Lyall said. "The demand for vermiculite for construction is increasing enormously, particularly for lightweight fireproofing."

Two new directors were also elected: Dayton L. Prouty and Lee Irvine, vice-president of Intermountain Insulation Co., Salt Lake City, Utah.

Virginia Paper Mill

(*From page* 102.)

alyzer with Leeds-Northrup control. Draft at the firing end is controlled by an induced-draft fan damper actuated by a Leeds-Northrup controller. Control equipment also includes a Hayes indicating and recording CO_2 analyzer. A Wheelco flame failure controller automatically shuts off the gas supply if the flame goes out. A Brown controller automatically regulates the pressure, and the flow is measured by a Foxboro meter. The kiln and slurry feeder speeds are automatically controlled by Leeds-Northrup instruments which maintain a fixed slurry feed ratio when the kiln speed is varied as necessary for proper burning conditions.

All these instruments are mounted on the Leeds-Northrup kiln control board at the firing end which is in a glass-inclosed cubicle. Behind the panel are the electrical controls for all motors. The entire cubicle is kept under pressure to keep out dust. Other instruments for equipment preceding the kiln are on an operating panel in the kiln feed building.

This is believed to be the most completely instrumented kiln in the entire paper industry and it insures very uniform burning with the minimum of attention and of human error or judgment. The burner can be adjusted for flame characteristics if necessary, but this is seldom required. Operating at a throughput of 150 to 160 tons daily over a month's period the fuel consumption was 7,500,000 B.t.u per ton of kiln product. Gas temperatures were 1,550 deg. F. at the thermocouple 100 ft. from the discharge end, 650 deg. F. at the entrance to the chain section, and 380 deg. F. at the exit from the kiln. The sludge leaving the chain section contained 21 percent moisture, and the kiln product contained 87 percent CaO.

Waste gas from the kiln first passes through a Traylor 14-ft. dia. by 40-ft. high scrubber, which has a stone bin on top. This scrubber has a baffle plate in the center which deflects the gas downward and then upward through wooden grids sprayed by water. The gas then goes to a 10-ft. dia. by 23-ft. high Peabody scrubber which has two perforated stainless steel plates flooded with water, so that the gas bubbles through. This cleaned gas passes through a Buffalo 103,000-c.f.m. induced-draft fan and through a 5- by 60-ft. steel stack to atmosphere. Because 25-cycle current is used, it was not possible to get a two-speed motor; so two 200-hp. motors are used—one 500 and the other 700 r.p.m., both direct-connected on the same shaft. When operating at the lower capacity ranges, the slower speed motor is used.

This gas cleaning system is 98 to 99 percent efficient. The gas is not being used at present, but later a part of it may be used for supplying CO_2 to the Hargreaves-Bird chlorine cells which are a part of the pulp bleaching process. When this is done, the few old vertical lime kilns remaining at this plant may be shut down and all lime burning may be done in the new rotary.

The collected slurry is pumped to mud washers and the water from these—containing 2 percent solids—is used as wash water. Only fresh water is used in the scrubbers.

The burned lime is discharged from the kiln onto a 32-in. Traylor deep-pan conveyor which is inclined at 30 deg. to discharge either direct into a Dorr slaker or into two 25-ft. dia. by 25-ft. high storage tanks feeding the slaker. Should it ever be desired to use raw lime from another source in the process, it would be introduced into the circuit at this pan conveyor.

The Rust Engineering Company was the general contractor for the construction of the entire addition, including the new lime kiln, the caustic liquor works, and all related equipment and buildings. The Traylor Engineering and Manufacturing Company supplied the new kiln and related equipment, and the caustic liquor equipment was supplied by the Dorr Company. Design and construction were carried on in cooperation with the operating staff of the West Virginia Pulp & Paper Co., including E. C. Williams, general manager, Harold Miller, superintendent of recovery operations, and L. O. Gorrell, assistant superintendent.

Canadian Institute of Mining and Metallurgy Meets in Edmonton, Alberta

THE 55th annual general meeting of the Canadian Institute of Mining and Metallurgy was held in Edmonton April 13, 14, and 15 under the auspices of the Northern Alberta branch of the institute, with

By M. F. GOUDGE

the co-operation of the Calgary, Rocky Mountain, Yellowknife, and Port Radium branches. More than 1,200 delegates attended. The meeting was presided over by the president, Dr. Desmond F. Kidd of Vancouver, who turned over the presidency to Professor A. E. Flynn of Halifax at the conclusion of the sessions.

Sixteen technical sessions were held, and the six divisions of the institute held their annual business meetings, at which the incoming officers for 1953-54 were elected. Social activities included three luncheons, one of which was a complimentary event tendered by the Government of Alberta; a cabaret dinner; a ladies' dinner; the president's reception; and the annual banquet and dance.

At the annual banquet the major institute honors were awarded. These included the Ryan Safety Trophies awarded to various Canadian mines having excellent safety records. The Barlow Memorial Medal was awarded to James B. Mawdsley, University of Saskatchewan, Saskatoon, for his paper on uranium deposits in northern Saskatchewan. The institute's senior award, the Blaylock Gold Medal, was awarded to M. F. Goudge, chief, Industrial Minerals Division, Department of Mines and Technical Surveys, Ottawa, for "distinguished service to Canada in the field of mining and particularly for his work on industrial minerals."

The medal for bravery was awarded to Donald O. MacLennan of Glace Bay, N. S., for bravery in a coal mine disaster at Glace Bay on July 9, 1952, in which six men were killed and another was injured.

With the meeting being held in a province in which the major mining industries are concerned with the production of oil and coal it was only to be expected that these two minerals would hold the spotlight in the main symposium, which dealt with the role of minerals in the industrialization of western Canada. However, in this same theme the industrial minerals came in for a generous share of attention, and reference was made to the important part played by limestone, salt, sulphur, sodium

A. E. Flynn, president of the Canadian Institute of Mining and Metallurgy.

sulphate, clay, sand, and gravel in the construction, ceramic, and chemical industries of the West.

A paper entitled *Outline of Plant Processes in the Manufacture of*

M. F. Goudge, recipient of the Blaylock Gold Medal.

Roofing prepared by K. A. Ramsay, chemical engineer, Building Products Limited, Montreal, and presented by L. R. Wood, superintendent of the Edmonton plant of the company, described the method of manufacturing asphalt roofing, and the important part played by industrial minerals in making the roofing was brought out. Either pulverized limestone or slate flour is used to stabilize the coating asphalt, and the addition improves the performance to a very great degree. Silica sand and talc are also used to treat the surface of the roofing. In 1952 the Canadian roofing industry used more than 50,000 tons of limestone as stabilizer, 11,000 tons of talc, and 1,200 tons of silica sand. The principal mineral component of the roofing, however, is the colored mineral granule that comprises the coating. These granules are made from carefully selected rock and are colored with weather-resistant pigments bonded with sodium silicate. The granules are then fired in a furnace and the color is thus permanently burned in. In 1952 the roofing industry consumed over 125,000 tons of mineral granules. The life of the roofing depends very largely on how the granules are applied.

In a paper entitled *Industrial Minerals in Oil Drilling Muds*, F. Parker, Magnet Cove Barium Corporation, Houston, Tex., gave data on the variety of industrial minerals used in oil-well drilling muds. The mud pumped down the well through the drill pipe and the drill bit performs these important functions: (1) it lubricates and cools the drill bit; (2) the circulation of the mud carries the rock cuttings from the bit to the surface; (3) it seals the walls of the well bore by placing a cake of mud on the sides of the hole, preventing caving of the soft rock; (4) it prevents blow-outs by providing a hydrostatic pressure sufficient to prevent the flow of gas, oil, and water to the surface.

The preparation of these drilling muds is a highly specialized business. Approximately $2,000,000 was spent by oil companies for minerals used in drilling muds in 1952. The principal minerals used are bentonite, barite, witherite, salt, and gypsum. Chemicals such as sodium bicarbonate, soda ash, caustic soda, and phosphates are also added.

Bentonite is the most important mineral used in drilling muds in Western Canada. Its consumption has risen from 6,300 tons in 1948 to 18,600 tons in 1952. For use in oil-well drilling mud the bentonite must be dried, ground, and bagged. The high moisture content of the bentonite as mined—up to 30 percent—must be reduced to 6 percent. This is accomplished in rotary dryers, which are operated with care so as not to overheat the bentonite. From the dryer the bentonite is passed to roller grinding mills, where it is ground to A.P.I. specification of 90 percent minus 200-mesh. Air classifiers are used to control the particle size.

Barite, known as the king of minerals used in oil-well drilling muds the world over (because of the quantity used), does not hold this distinction in Canada. Only 2,000 tons was used in Canadian oilfields in 1952, as compared with the 18,600 tons of bentonite. The reason is that this heavy mineral—specific gravity 4.3 to 4.6—is used principally to control excessive formation pressure, which is not encountered in Canada; and thus it is not a major constituent of the muds used. Specifications for barite for use in drilling muds require that the particle size must be minus 325-mesh; that in composition it must consist of 94 percent $BaSO_4$; and that it contain not over 0.01 percent soluble materials, 1.0 percent clay, and 0.1 percent insoluble carbonates.

The quantities of the other major minerals and chemicals used in the making of drilling muds in 1952 were as follows: 3,000 tons of sodium bicarbonate, 1,000 tons of witherite or barium carbonate, 800 tons of caustic soda, 500 tons of salt, and 500 tons of soda ash. In conclusion Mr. Parker stated that the amounts of minerals and chemicals used in drilling fluids will increase and although at present most of the prepared materials for this purpose are imported, it is to be hoped that Canadian industry will continue to play an active part in this development.

M. S. Badollet of Johns-Manville Research Center, Manville, N. J., prepared another of the valuable series of papers on asbestos that he has submitted to the institute in recent years. This paper, *Asbestos Fibers, Production, and Usage*, was presented by J. E. Morrison of Canadian Johns-Manville Company, Asbestos, Quebec. He said that world production of asbestos fibers of all varieties approximated 1,600,000 tons, Canada supplying 966,382 tons, or 64 percent of all fiber mined. Production still does not meet the demand. The three varieties of asbestos used in large quantities industrially are chrysotile, amosite, and crocidolite, chrysotile accounting for 90 percent of all asbestos fibers used in industrial products. In 1952 the United States imported 734,500 tons of chrysotile, of which 668,800 tons came from Canada. It is used for a great variety of purposes including textiles, brake linings, clutch facings, insulation, papers, millboards, asphalt roofing, floor tiles, and asbestos-cement products.

Amosite was imported into the United States from South Africa to the extent of 18,319 tons in 1952. It is used principally in magnesia insulating products and in lightweight asbestos-cement wall boards. Crocidolite or blue asbestos is produced principally in South Africa, but also in Australia. The United States imported 7,100 tons of this type of fiber in 1952. It is used principally in asbestos-cement products, where its strength and increased porosity improve manufacturing processes and boost production rates. It is also used in filter pads.

The anthophyllite, tremolite, and actinolite varieties of asbestos are found in many parts of the world but are not of present importance industrially.

In his paper *The Cassiar Asbestos Deposit of McDame Lake, B. C.* W. V. Smitheringale gave the first detailed description of the deposit and operations of this newest Canadian producer of chrysotile asbestos. Staked in July, 1950, by V. Sittler, a mechanic at the Army maintenance camp, Fort Nelson, B. C., the claims were optioned by Conwest Exploration Company, Toronto, in October, and an active program of road building and development was started immediately. The property is situated on McDame Mountain in Northern British Columbia about 70 air miles southwest of Watson Lake airport in the Yukon. Asbestos from the property is hauled 360 miles by truck to Whitehorse, Yukon Territory, thence by White Pass and the Yukon Railway to Skagway, Alaska, to be shipped by water to Vancouver, B. C.

The asbestos occurs on the top of a spur of McDame Mountain at an elevation of 6,000 ft. One of the outstanding features of the deposit is the extensive area of asbestos fiber talus that covers an area 1,000 ft. by 1,000 ft. on the western side of the ridge, and 1,200 ft. by 250 ft. on the eastern slope. This material has been formed by frost action on the outcrops of asbestos-bearing rock. Tests made on the talus material indicate that it will yield 7 percent of 3R fiber, plus 5 percent of 4K fiber, along with some No. 1 and No. 2 crude. Samples from a crosscut tunnel driven through 251 ft. of continuous ore at a depth of 250 ft. below the surface show that the rock in place will grade slightly better than the surface material. Indications are that the deposit will be over 400 ft. wide at this depth. Full-scale spinning tests show the fiber to be fully the equal of the standard Canadian fiber from Quebec. An important feature of the fiber is that although magnetite occurs in places in the veins, this magnetite separates very readily during processing, leaving what is virtually a non-ferrous fiber that will meet the United States stockpile specifications.

During 1952 a mill of 250 tons' daily capacity was built and put into operation on talus material. Expansion to a minimum of 500 tons per day is planned by 1954. Estimates of at least 30 years of ore at this latter rate appear conservative.

Officers elected for the Industrial Minerals Division for 1953-54 are as follows: chairman, T. H. Janes, Ottawa; vice-chairman, D. F. Hewitt, Toronto; and secretary-treasurer, V. A. Haw, Ottawa. Committee members include R. Wiseman, St. Lawrence, Newfoundland; M. G. Goudge, Halifax; W. J. Wright, Fredericton; P. Bourret, Quebec; G. F. Jenkins, Thetford Mines; N. B. Davis, Ottawa; W. G. Cowie, Winnipeg; F. V. Tomkins, Regina; F. V. Seibert, Edmonton; and V. L. Eardley-Wilmot, Victoria.

After the convention bus tours were arranged to the Leduc oilfield and to the industrial and oil refinery area on the outskirts of Edmonton. A flight *via* Canadian Pacific Airlines was also made to visit the uranium mine and mill of Eldorado Mining and Refining, Limited, at Uranium, Saskatchewan.

Rising Sales, Profits Reported For International Minerals

Net sales of International Minerals & Chemical Corporation for the nine months ended March 31, 1953, were $62,994,231, as compared with $58,421,381 for the corresponding nine-month period ended March 31, 1952, an increase of 7.8 percent, according to an announcement made by Louis Ware, president.

Net earnings after taxes for the nine-months ended March 31, 1953, were $4,270,298, ($1.72 per common share) compared with $4,024,511 for the corresponding period the year before, an increase of 6.1 percent.

New Facilities Shown at Open House Of Janesville Sand & Gravel Co.

THE Janesville Sand and Gravel Company, Janesville, Wis., which through the years has established itself as one of the most progressive operators in the sand-and-gravel and related industries, held an open house on April 16 for dealers to inspect its new facilities. What visitors saw included the following: a new sand-and-gravel plant, an improved older plant, new block machines in the products plant, an enlarged warehouse, a new retail building supply store, additional general offices, and a modern ready-mixed concrete plant. They were also served a delectable smorgasbord lunch.

The company was founded in 1907 as the Janesville Cement Shingle Company, producing its own sand. A demand arose for sand and gravel which led to adopting the present company name in 1910. In 1908 a larger gravel plant (No. 1) was built in another location and this was operated until 1936. The No. 2 plant just north of the present operations was opened a few years later; it has since been abandoned. The No. 3 plant, opened in 1913, has also been abandoned. The No. 4 plant, which was recently improved, is on the company's main site, where the ready-mix and block plants, the warehouse, and the store and offices are located. The No. 5 plant, built in 1952, is within reach of deposits containing at least 50,000,000 tons of sand and gravel. The ready-mix plant was erected in 1940, the concrete block plant and the garage in 1946, and the warehouse in 1949.

The new sand-and-gravel plant of the Janesville Sand & Gravel Company, Janesville, Wis. The scale house for weighing cars is in the left foreground.

The volume of business done by the company has grown steadily, with a particularly rapid increase since World War II. Both gravel plants are operated all year, shutting down only during the most inclement weather. Each produces 40 to 50 carloads daily, much of this going into the ready-mix and products manufacture. In 1952 the output of ready-mix was 44,000 cu. yd., and 2,400,000 blocks were sold. The volume of business in 1952 was nearly $2,000,000, divided as follows:

Wholesale sand and gravel	$462,000
Retail sand and gravel	42,000
Ready-mixed concrete	479,000
Concrete blocks	516,000
Total	$1,728,000

Sand and gravel and ready-mixed concrete are sold direct, but the blocks and warehouse goods are sold through nearly 200 lumber yards and building materials dealers throughout southern Wisconsin and northern Illinois.

The enlarged warehouse and the new retail store are of particular interest, as

(*Continued on page* 142.)

Looking down into the pit in the new sand and gravel plant.

The plant office, which has been enlarged, with the new retail store at the left.

Gas Flow Patterns

(*From page* 105.)

kiln systems. Gas passages are much larger, velocities are lower, and turbulency is of a lesser degree in rotary kiln systems than in shaft kilns. In fact, certain recent attempts at increasing gas turbulencies in certain sections of the rotary kiln system are an outgrowth of the realization that gas flow is much more direct and straight-line than it should be. In a later article the discussion will center on the flow pattern of gases within the kiln itself. The writer will also discuss the gas flow set up with the new self-cooling steel heat exchanger developed by him for controlling the gas turbulency and retention time in the kiln, and the effect on material-gas contact.

The entry of combustion air, usually preheated secondary air from coolers, invariably reaches the kiln by flowing in a right-angle turn out of the breeching from the cooler. This preheated air may rise slowly under either minus or plus pressure up through a large opening between kiln and cooler; or it may be pushed or pulled with considerable velocity through a restricted opening in the breeching. Rotary kilns operate under various fuel input conditions in relation to their diameters and space volume. The pattern of air flow to the burner nozzle and flame is therefore within a wide range. The position of the burner, the shape of the hood, the bouncing effect of air in the bend of the breeching passage, the air velocity, and the relative "tension" or "compression" the air is under as it is pushed or pulled through the breeching into the kiln—all these affect flame steadiness, flame length, fuel-air mixing, temperature distribution, and atmospheric condition of gas above the material bed in the kiln. Figure 2 shows the difference in flow pattern between a gas being pushed through a crooked duct, and one being pulled through the same passage. It illustrates the difference between "tension" and "compression", tension which tends to align the fluid particles by increasing directional pull downstream, and compression which causes a piling-up effect against frictional resistance with decreasing push downstream. Balanced draft shows intermediate turbulency at one point of zero pressure differential.

Combustion air may enter the kiln under pressure from cooler blower or from stack-effect of a deep breeching duct; or it may be pulled in by kiln draft. Usually there is a speeding up of air velocity through the breeching, which is generally constricted in duct opening, or because of grizzly or grate bars across it. Figure 3 shows the somewhat overaccentuated air flow patterns under different conditions and design. C and D sketches show how design may further re-enforce the flow path, and how judicious use of burner position can bring about changes of atmosphere in contact with the material. Firing with a low-position burner, as in E, has shown in practice that lining impingement can be lessened, flame bouncing can be eliminated, and reducing conditions can readily be maintained without resorting to long-flame firing. It should be recalled that in an earlier article, the writer also pointed out the interfering effects had with burner nozzles placed directly in the up-flowing air stream.

K. T. WRIGHT has been elected secretary and treasurer of the Alpha Portland Cement Company, and I. J. RINKER was named assistant secretary and assistant treasurer.

At the same time the retirement of J. J. MATTHES as secretary and treasurer of the firm was announced. Mr. Matthes, who was affiliated with Alpha Portland Cement Co. for 50 years, will continue to serve as a director.

REPORT

"NO DOWNTIME IN 4 YEARS"

It's that kind of record that makes Eagle equipment a favorite in the limestone field. In addition to the faithful 24 x 24 hammermill pictured above, there is installed in this quarry an Eagle 36 x 42 which takes the rock from the gyratory crusher and reduces it for the smaller mill.

Please write for more details if you're interested.

EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW CRUSHERS · IMPACT BREAKERS PULVERIZERS · CONVEYORS · LOADERS

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Wood Dale Friction Drive Conveyor Pulleys. This 8-page catalog-type folder explains the advantages of the compression-type hubs for conveyor pulleys. Drawings show the operation of the hub. Most of the bulletin is filled with specifications, prices, and similar technical information. Wood Dale Machine and Manufacturing Co.

2. Rotary Kilns, Coolers, Dryers, Rotorts, and other Dependable Processing Equipment. Bulletin No. A-442. The 28 pages of this booklet illustrate and describe a line of rotary kilns and other processing equipment. Installation and manufacturing photos are used extensively while drawings bring out points not covered by the photos and text. Several pages are used to illustrate important components such as tires, driving gears, supporting rollers and speed reducers. Replacement parts are covered and a list of prominent users is given. Two pages show other equipment—hoists, locomotives, mills, hydrators, etc., made by the company while another two show some of the manufacturing facilities. Vulcan Iron Works.

3. Cardox-Hardsocg Horizontal and Vertical Drills. Folder No. M-1251. The six pages of this folder show five models of drills for use in clay, gypsum, shale and similar deposits. These drills use auger type shafts with a special cutterhead that may be equipped with carbide tipped bits. Horizontal, vertical, and tractor mounted units are shown and described. Cardox Corporation.

4. Fabricated Fittings by Naylor. Bulletin No. 525. The four pages of this bulletin contain illustrations of many kinds of standard and special fabricated fittings for piping. Specifications and prints are given on standard lightweight pipe fittings such as tees, elbows, wyes, laterals, crosses, bends, and reducers. Many special fabrications are shown. The text explains the advantages of fabricated fittings. Special types of metal are used in corrosive or other applications. Naylor Pipe Co.

5. 9 Ways to Reduce Your Waste in Kilns and Dryers. Form No. 60. This folder points out ways of saving on kiln and cooler lining cost by using plastic and castable refractory materials. The line of refractory products made by the company is covered. Plibrico Company.

6. Now It Can Be Sold to Multiwall Bag Users. Kraft-lok. This folder presents a new type of valve bag to the trade. It illustrates and describes the gusseted valve-type multiwalls made under the trade name. In-use photos bring out the features of the bag while the text supplements the pictures. Kraft Bag Corporation.

7. The Transportometer Line. Bulletin No. 301. The operating principles of the weighing device is described and shown in this eight-page bulletin. In addition the various applications to conveyers, feeders, and complete weighing units is shown. Installation photos are included as well as dimensions of the different models. The back page covers other equipment made by the company—sintering machines and pelletizers. Sintering Machinery Corporation.

8. Whales Do More Screening Than Anybody. This six-page mailing folder uses a whale to call attention to screening and dewatering problems. Advantages of using a round rod design in the screen are explained and illustrated. Other styles of screens are shown as additional items in the line. Bixby-Zimmer Engineering Company.

9. Toledo, Headquarters for Scales. Form 2020-e. This multiple folded mailing piece describes the features of a line of scales. Except for the brief opening text the space is devoted to illustrations and explanations of many different applications of scales in virtually every industry. All types from 8 oz. to 40 ton capacity, and equipped to print labels, proportion by weight, or control processes are shown. Toledo Scale Company.

10. Day Re-Ball Stabilized Gyrating Screens. The six pages of this folder introduces a gyrating screen with a set of balls held on a coarse mesh under the screen surface. The impact of the bouncing balls cleans the screen cloth. In addition to describing the features of the screens, a great many different models for specialized applications are shown. Dimensions of one to four deck machines are given. The J. H. Day Company.

11. Allegheny Metal Stainless Wire. This 20-page booklet gives technical data on the application of stainless steel wire. Tables of physical properties, corrosion resistance, and analysis are included. The principal uses of stainless wire are covered such as cold heading, weaving, heat resisting belts, rope, spring wire, welding and winding. Allegheny Ludlum Steel Corporation.

12. Cone-Drive Gears at Work in Mining. Bulletin No. M-55. The four pages of this brochure show typical applications of worm gear sets and speed reducers in mining and quarrying equipment. Undercutters, conveyors, drills and jumbos are shown as well as the gears used on them. Cone-Drive Gears, Div. Michigan Tool Company.

13. Convair Pneumatic Conveying Systems. Bulletin No. 104. Eleven different applications of pneumatic conveying systems are covered in the eight pages of this bulletin. The drawings show layouts while the text explains the problem and its solution. A list of products handled by pneumatic systems is given. The bulletin is designed to present many novel

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June, 1953

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More Information, Please

applications of this method of conveying. Convair.

14. Arcaloy Stainless Steel Electrodes. Bulletin AR58-16. This 20-page catalog covers the company's complete line of stainless steel electrodes. The two types of coatings are explained. Individual descriptions of 23 regular and special analyses electrodes, weld properties, welding procedures, current ranges, type numbers and other information are included. Alloy Rods Company.

15. Here's the reason . . . the complete story of Chicago Electric Company. This envelope-size six-page folder describes the services of the company in rebuilding and supplying rebuilt electrical power equipment. Illustrations show some of the facilities of the company while the text covers general information. Chicago Electric Company.

16. Tracto-Lift. King of Fork Trucks for all Outdoor Handling. Five of the eight pages of this bulletin show the fork truck being operated under a variety of adverse conditions. Two pages show the use of some of the attachments while another gives specifications for four models. Tracto-Lift Company.

17. Nelson Heavy-Duty Bucket Loaders. Form 531. This eight-page bulletin covers two models of bucket loaders. One is the P-11 and is mounted on rubber tires, while the other is the Q-11 which is mounted on crawlers. The center pages show various applications of the machines while the next two show construction features and give specifications. Other products are illustrated on the back cover. N. P. Nelson Iron Works.

18. Hobart Arc Welding and the hundreds of ways it pays. EW175. This 40-page booklet shows a great many applications of arc welding in construction, machinery maintenance, and many other ways in industry. Included in the book are arc welders, electrodes, and accessories. Hobart Brothers Company.

19. The Logistics of Bags. This eight-page booklet describes and pictures the handling cycle from receiving, through filling to shipping. Photos show various methods of handling by fork and platform trucks and the use of specialized attachments. Suggestions for planning flow of bagging operations, and for obtaining more effective storage are included. Elwell-Parker Electric Company.

20. Condensifilter Provides Instrument-Quality Air. This single page bulletin shows a dehydrator and filter unit for compressed air lines that removes water, oil, dirt, and sludge from the air. The unit is shown in cutaway views and the components are portrayed individually. Operation of the device is explained and specifications are given. Hankinson Corporation.

21. Marathon Electric Motors, Generators, Terminal Blocks. SB-125-3. The 28-pages of this booklet cover a wide variety of motors, generators, and terminal blocks. The booklet is devoted largely to motors and covers all popular sizes from 1/20 hp. to 2500 hp. Dimensions are given and prices are shown. Marathon Electric Manufacturing Corporation.

22. Working With Clark. This loose-leaf booklet contains reproductions of a number of ads that were used to acquaint prospective users with the products of the company. While introductory in nature these ads covered the many products of the company in an attractive manner. Materials handling trucks, axles, transmissions, and drive units are covered. Clark Equipment Company.

23. Schield Bantam Model T-35 Truck Crane. Bulletin TCR-301. The six pages of this bulletin describes a 6-ton, ¼-cu. yd. truck crane. The bulletin contains specifications, dimensions and operating data, engineering features, and attachments for the crane. Other information includes truck chassis information, and special equipment for converting a truck chassis to crane carrier use. Schield Bantam Company.

24. Athey Model 2 Force-Feed Loader. Form No. A-257. This bulletin has a complete description, specifications, and photos of the loader in its eight pages. Attachments are shown by drawings while the many uses of the loader are brought out by the application photos. Athey Products Corporation.

25. Gar Wood Heavy Duty Dump Bodies and Hoists. Bulletin No. HB-302-R. The illustrations in this four-page bulletin bring out the principles of the hoisting mechanism, construction of the dump bodies, and features of the tailgate. The hydraulic pump is shown and explained, and information on various types of body sides is given. Gar Wood Industries.

26. Non-Skid Multiwall Gives All-Way Skid Control. A non-skid multiwall bag is the subject of this 4-page bulletin. A dozen advantages of the non-skid feature are spotlighted while tests are cited to prove the value. The folder is designed merely to introduce the new bag and is confined to presenting the claims made for it. Union Bag and Paper Company.

27. Meehanite Castings. The characteristics of Meehanite castings are given in the eight pages of this bulletin. Descriptions of the general grades, heat-resisting grades and corrosion-resistant grade are given. Physical properties of the material are covered and comparisons with other cast metals are given. Typical applications are pictured and a table of standard bar stock sizes is included. American Brake Shoe Company.

28. Pennsylvania Pump and Compressor Company. Bulletin 546. This general catalog briefly describes a line of air and gas compressors, oil-free compressors, dry vacuum pumps, aftercoolers, valves, and centrifugal pumps for boiler feeding and other industrial uses. The six pages of the bulletin picture each item in the line and give a brief description, capacities and sizes available. Pennsylvania Pump and Compressor Company.

29. Reeves Speed Control. Bulletin No. G-500-1. The bulletin is devoted to three styles of variable speed reducers, the transmission, the Motodrive, and the motor pulley. Each features a v-belt drive and a variable pitch pulley arrangement. Various mountings and adaptations, horsepower capacities, and general engineering information are included in the twelve pages of this bulletin. Reeves Pulley Company.

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Here's the secret of alternate ROCKMASTER teamed with alternate velocity loading

Alternate Velocity Loading is a newly introduced ROCKMASTER development which has produced astounding improvements in breakage and holds great promise for better blasting in mining, quarrying and construction work.

Every other hole is loaded with low velocity explosives. The balance are loaded with high velocity explosives. The faster ROCKMASTER millisecond delay caps fire the low velocity holes to stress the rock and the next delay interval releases the sharp second punch of the high velocity explosive.

The results of alternate velocity action can be seen in the photo above. The number one holes (which appear larger and lighter colored) were loaded with low velocity Apex and fired with No. 1 ROCKMASTER caps. The number two holes (which appear smaller and darker) were loaded with high velocity Apex and fired with No. 2 ROCKMASTERS.

All holes were initiated from the bottom to prolong confinement of the blast—giving maximum results of the alternate velocity loading.

At present Alternate Velocity Loading is being used only in quarry blasting, but it holds possibilities in many other fields. Talk with your Atlas representative about it. And send for your copy of the new Atlas periodical "Better Blasting" which details *the inside story* of Alternate Velocity Loading.

Absolutely no secondary breaking was necessary on this Alternate Velocity Shot. No. 1 holes show that explosive has worked longer on the burden than the high velocity explosive in the No. 2 holes.

ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

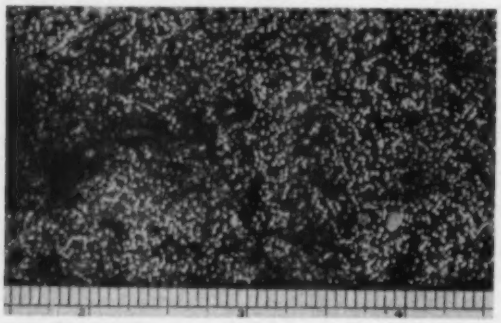
ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

Offices in principal cities

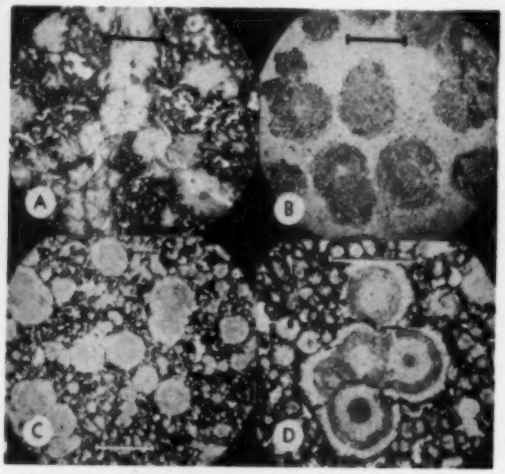
Analcime

(*From page* 107.)

Popo Agie member of the Chugwater formation, by W. D. Keller, published in the Journal of Sedimentary Petrology, Urbana, Ill., and *The Occurrence and Origin of Analcite and Meerschaum Beds in the Green River Formation of Utah, Colorado, and Wyoming*, by W. H. Bradley, U.S. Geological Survey Professional Paper 158, pp. 1-9, Superintendent of Documents, Washington, D. C.



A closeup of analcime rock, showing the common oölitic texture. Size of oölites can be estimated from the ruler.



Right: Photomicrographs of analcime rock. The bar in each photo is 1/25 in. long. Oölites in A, C, and D are nearly pure analcime, but the dark interstitial material contains some reddish oxide. In B the dark clusters are mixtures of analcime and fine-grained silica (quartz) silt.

personal mention

D. A. Rhoades, vice-president and general manager of Kaiser Aluminum and Chemical Corporation since 1946, was recently elected president of the Aluminum Association at the organization's annual meeting.

Mr. Rhoades has been with Kaiser for 27 years, first serving the Kaiser Paving Company as a concrete technician. Later he became general superintendent of all Henry J. Kaiser Co. sand-and-gravel operations. In 1939 he was made project manager of the Kaiser-managed construction company during the building of the Shasta Dam. He acted in the same capacity during the building of the Permanent Cement Company's big plant at Permanente, Calif. Transferred to the Permanente Metals Corporation in 1942, Mr. Rhoades then became general manager of the four California plants producing magnesium for the war effort.

Three new vice-presidents were added to the Calaveras Cement Company list of officers by the company's board of directors at its organization meeting recently. They are E. M. Barker, Mel J. London, and Arnold M. Ross.

Mr. Barker has been manager of the company's plant at San Andreas, Calif., since 1947. Mr. London is general sales manager; and Mr. Ross has been assistant vice-president since 1952.

E. M. Barker

M. J. London

A. M. Ross

Grant Metzger

H. C. Maginn continues as executive vice-president and A. A. Hoffman as vice-president. William Wallace Mein Jr. is president of the firm, and William Wallace Mein is chairman of the board.

The board appointed a finance committee consisting of Mr. Maginn (chairman), A. A. Hoffman, and Charles W. Fay, with Joseph Tedesco, Calaveras secretary-treasurer, as alternate member. The committee will advise the board on such matters as capital expenditures and dividend policies.

The board also announced the appointment of Grant Metzger, mechanical superintendent, as acting manager of the San Andreas plant.

H. A. Sommers has been appointed chief engineer by the Westvaco Chemical Division of Food Machinery and Chemical Corporation. Since joining Westvaco in 1950 Mr. Sommers has been assistant chief engineer, with particular responsibility for the Intermountain Chemical soda ash plant development at Green River, Wyo.

Mr. Sommers has been closely associated with the engineering problems of the heavy chemical industry. With Mathieson Chemical Corporation he was project engineer and work manager for their magnesium-chlorine plant (Lake Charles, La.) and later chief engineer, assistant to the vice-president, and director of operations. Prior to joining Westvaco he was manager of the carbon dioxide plant operation of the Pure Carbonic Corporation.

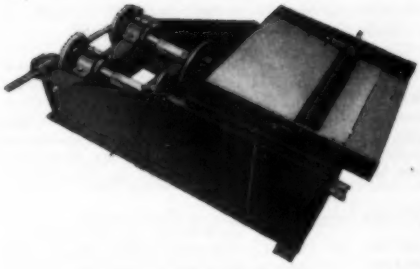
W. S. Nugent of the Peninsular Division of the Consolidated Cement Corporation, Chicago, was recently elected a vice-president of the company, according to Smith W. Storey, president.

OKey! SO YOU HAVE A SPECIAL AGGREGATE WASHING PROBLEM

So, your material is dirtier or stickier than usual—contaminated with mud, trash, shale, lignite, peat or what have you? Don't be discouraged—EAGLE equipment has "cleaned up" many a deposit that was thought to be commercially impractical. Besides standard fine material washer-classifier-dehydraters and coarse material washer-dewaterers, Eagle builds many special units to meet specific conditions. Eagle is "way ahead" in experience, range of equipment, practical design.

THERE'S AN EAGLE MATERIAL WASHER FOR EVERY NEED!

EAGLE SPECIAL WASHER-DEWATERER with perforated screw flights and section of paddles for more effective removal of lignite, mud and trash from material. A secondary stage of washing and dewatering is sometimes advisable.



EAGLE SHALE REMOVER

For removal of shale and similar material. Coarse material is fed uniformly onto inclined plane, in a thin layer. End of tub is sealed off, increasing velocity of rising column of water in tub, which is forced through opening formed by two hinged baffle plates. Material passing over opening is freed of shale which washes out, aggregate going to the bottom. The screw further washes and scours the material, then drains and discharges it.

WASHER-DEWATERER WITH TRASH REMOVER TUB END

Handles removal of chips, coal, vegetation and other foreign material more easily floated than shale. Instead of standard flotation method, extraneous material is rolled up inclined discharge spout.

Eagle Special Washing Equipment is described in Catalog 47.

EAGLE IRON WORKS

LEADERS IN AGGREGATE WASHING AND CLASSIFYING EQUIPMENT FOR HALF A CENTURY

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G. E. Stone

George E. Stone has been named to succeed the late W. W. Patnoe as chief engineer for Basic Refractories Incorporated of Cleveland, Ohio, manufacturers of dolomite granular refractories for the steel industry. The appointment was announced by Max Muller, manager of operations, and became effective on April 1.

Mr. Stone joined Basic Refractories in 1921 and soon became chief plant engineer. In October, 1952, he was named acting manager of the firm's Ohio works.

Ted L. Johnson has been appointed editor of the *Ideal Cement Mixer*, publication of the Ideal Cement Company. Mr. Johnson was formerly associated with the *Denver Post*, the *Trinidad Morning Light*, and Bell publications.

Joseph J. Bozis has been appointed assistant to the sales manager, feed phosphate department, International Minerals & Chemical Corporation's Phosphate Division. In his new position, Mr. Bozis will assist Gladwin A. Read, sales manager of feed phosphates, and will be responsible for general office detail, including sales correspondence and special sales assignments.

For the last 12 years Mr. Bozis has been general purchasing agent for the Standard Milling Company of Kansas City, Mo. His previous experience with that firm also included divisional supervision and direct sales.

Nils Anderson, E. Spencer Miller, and R. H. B. Smith were elected directors of Dragon Cement Company, Inc., at the annual meeting of the stockholders held recently in Thomaston, Maine.

Mr. Anderson is chairman of the board of Debevoise-Anderson Company (Inc.) of New York City; Mr. Miller is president of the Maine Central Railroad Company; and Mr. Smith is vice-president in charge of sales of Dragon Cement.

R. L. Walsh

Raymond L. Walsh, assistant chief engineer of the Universal Atlas Cement Company, New York, a U. S. Steel subsidiary, has been appointed chief engineer, according to an announcement released by H. P. Reid, vice-president, engineering.

Mr. Walsh has been connected with the engineering and new construction program of the company for a number of years. He joined the firm in Chicago in 1925 as assistant electrical engineer. In 1929 he became electrical engineer and three years later assistant chief engineer, a position which he has held until the present time.

A graduate in electrical engineering of Armour (now Illinois) Institute of Technology, Chicago, Mr. Walsh is a member of the American Institute of Electrical Engineers and the Association of Iron & Steel Engineers. He has participated in Portland Cement Association committee activities, working with the Bureau of Accident Prevention and Insurance on the sub-committee for electrical hazards in quarry operations.

James C. Hicks has been appointed director of refractory research for Kaiser Aluminum & Chemical Corporation, according to Ralph E. Knight, vice-president and director of research and development. He succeeds the late Leslie W. Austin.

During the last 10 years with Kaiser Aluminum, Mr. Hicks has been intimately associated with the development of the company's refractory products for basic industry, and for eight years was assistant to Mr. Austin. He will make his headquarters at Milpitas, Calif.

Paul J. Worseck was recently named assistant manager of safety and welfare for the Lehigh Portland Cement Company. He joined the safety and welfare department in 1948, and has specialized in employee vision tests. Mr. Worseck is also assistant editor of the *Lehigh News Conveyor*.

The appointment of Kenneth F. Thomas, formerly assistant credit manager in the Chicago office of Universal Atlas Cement Company, to the post of assistant treasurer at the cement company's Pittsburgh office, effective April 3, was announced recently.

Mr. Thomas joined Universal Atlas in 1912 in the Chicago office. Except for a short interval when he worked as credit manager for a Chicago concern, he has devoted his entire career to credit work with the cement company at Chicago. There, through a succession of assignments, he rose to the position of assistant credit manager in 1941, a post in which he served until his present appointment.

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TAKE HARDFACING ALLOYS, FOR INSTANCE . . . Your authorized Airco dealer handles more than twenty types of hardfacing rods — to combat abrasion . . . impact . . . heat . . . corrosion. Every type of wear problem! He can show you how one application may add 2 to 25 times longer service life to new or worn parts.

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AT THE FRONTIERS OF PROGRESS YOU'LL FIND

GREATER UNIFORMITY of PERFORMANCE IS ASSURED with NOPCO ERTRANE* C

Every batch of Nopco* Ertrane C – the *most economical* air-entraining agent on the market – is carefully tested to assure uniformity of performance when this agent is added to portland cement. ASTM methods for determining entrained air and water retention properties are standard control tests for all production.

We are not content with having produced an outstanding additive which fully satisfies all the requirements of ASTM Specification C226-50T; we see to it that every pound of Ertrane C is "right up to the mark". Thus you can use Ertrane C with confidence, certain that the standard of quality is maintained without variation from bag to bag.

This specifically formulated air-entraining agent imparts *excellent durability* to concrete, plus plasticity (through air formation), water repellency, and desirable qualities that increase workability.

Ertrane C saves time and labor. It is only necessary to add this agent to water and stir (no additional chemicals are required). Feed systems remain clean when it is used, eliminating necessity for purging.

Profit by putting Nopco Ertrane C to work for you. We'll gladly supply full details and informative booklet upon request.

Samples of Ertrane C production are constantly checked in Nopco's laboratories in accordance with standard ASTM procedure – to guarantee maintenance of specified standard of quality, and uniformity.

Ertrane C can also be used to advantage in masonry cement.

Added to masonry cement, Ertrane C imparts a smooth, buttery texture – promotes easy spreading which greatly facilitates troweling.

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CHEMICAL COMPANY Harrison, N. J.

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Johns-Manville Industrial Friction Materials are specified by most leading manufacturers of earth moving equipment

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Manufacturers with a vital interest in the performance of their equipment prefer J-M Industrial Friction Materials! Time and again they have set records for endurance and low-cost operation. Whether in block, lining, facing or cone form, J-M Friction products are engineered for the job—formulated for maximum service life and top performance. Rigid manufacturing and inspection controls insure uniform high quality and reliability.

Be sure that your equipment will continue to give the excellent service the manufacturer originally built into it. Take a tip from the machine makers. Replace with genuine Johns-Manville Friction Materials.

Write for your copy of "Johns-Manville Industrial Friction Materials" FM-12A. It contains a wealth of important application and performance data. Address: Johns-Manville, Box 60, New York 16, New York.

JM

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INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

Virgil Sewell

Virgil Sewell has been named general superintendent of all Haydite lightweight aggregate subsidiaries of Texas Industries, Inc., according to Ralph B. Rogers, president.

Mr. Sewell has been general mill foreman of the General Portland Cement Company's No. 2 unit in Dallas since 1951. Previously he was operating foreman in charge of the quarry for the same company in Fort Worth. He had also served as purchasing agent and plant foreman for the Consolidated Cement Corporation in Fredonia, Kans., and Jackson, Mich.

At the annual general meeting of shareholders of Gypsum, Lime and Alabastine, Canada Limited, the following directors were elected: C. Gordon Cockshutt, P. P. Tyler, J. E. McConnell, S. G. Dixon, Robert A. Bryce, R. H. Cooper, George H. Dobbie and J. H. Robinson.

Atlas Asbestos Co. Ltd., Toronto, Ont., announces the appointment of W. S. Cowell, as vice-president in charge of sales and J. C. Anderson as vice-president in charge of production. Mr. Cowell formerly was general sales manager and Mr. Anderson formerly was production manager.

Victor E. Cole

Victor E. Cole has been appointed assistant operations manager for Kaiser Gypsum Company, Inc. He was formerly assistant to the general manager of Permanente Cement Company. In his new post he will be responsible to John V. Pooler, operations manager of Kaiser Gypsum, in the newly-created position.

Mr. Cole joined the Kaiser organization in 1941 as a junior construction engineer at the Richmond, Calif., shipyards and has held supervisory positions with Kaiser-Frazer Corporation at Willow Run, Mich., and Long Beach, Calif.

George B. Lamar has been appointed general manager of the Albion Kaolin Division of Interchemical Corporation, according to H B. Woodman, president of Interchemical. The newly constituted division was previously a unit of the corporation's Coated Products Division, which has been sold to an investor group.

Mr. Lamar has managed the Albion mine at Hephzibah, Ga., since 1924, when he succeeded his uncle, the late C. B. Lamar, who discovered the kaolin vein in 1900 and headed the mining company as president until 1922.

EARL VOELZ is the new maintenance superintendent for the Jefferson Island Salt Company's operation at Jefferson Island, La. He is responsible to Frank Wright, works manager, for all plant maintenance and construction work. Mr. Voelz had finished 21 months in the Air Force, with the rank of major, prior to assuming his present post. His experience in military maintenance during this period and in World War II provided a valuable background for his present duties. He is at present on Reserve status.

JOHN K. BEIDLER, general manager of the Machinery Division, and LOUIS P. STRUBLE JR., general manager of the Keystone Division, were recently elected vice-presidents of the Dravo Corporation, Pittsburgh, Pa. Both are directors of the corporation.

J. K. Beidler

L. P. Struble

CLIFFORD A. HILL, formerly controller, was elected treasurer, and EDWARD T. FITCH was named controller.

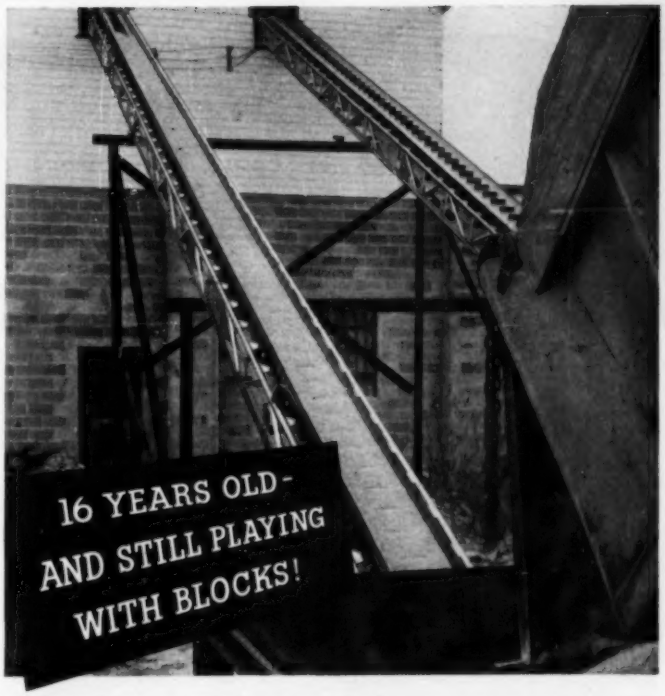
Mr. Beidler, a graduate of Lehigh University, started his business career with Dravo in 1935. After serving in sales and purchasing work with its Machinery Division, he was made assistant general manager in 1950 and general manager in February, 1952. He also is executive vice-president and a director of Dravo-Doyle Company, a Dravo subsidiary.

Mr. Struble, also a graduate of Lehigh University, began his career with Dravo in 1935 with its Engineering Works Division. He was appointed general manager of the Keystone Division in 1950, and was elected a director of the Corporation in 1951.

Mr. Hill was graduated from Pennsylvania State College and became assistant auditor of Dravo in 1929. He was elected controller in 1944. He is also secretary of the Dravo-Doyle Company.

Mr. Fitch attended the Pittsburgh School of Accounting and Duquesne University School of Business Administration. He joined Dravo Corporation in 1928 and was named assistant secretary and assistant treasurer in 1942.

The third engineering office of The Babcock & Wilcox Company to be located in the state of Florida within the past two years will be opened in Miami. The two previously opened offices are at St. Petersburg and Tampa. The new office will be charge of J. E. V. Dingemans and W. H. Barrere, who have been transferred from Barberton.



Original Farquhar Conveyor Sells Cement Block Maker on Six More!

The Farquhar Conveyors you see here (handling aggregates from receiving hopper to storage hopper) are just two of seven bought by Seberger's Concrete Block Co., Gary, Indiana, in the past 16 years. Complete satisfaction with the original conveyor (still on the job after 16 years) was one of the biggest reasons for the purchase of the other six. In the owner's own words, "This satisfaction has always been reaffirmed in subsequent purchases. Farquhar Conveyors provide high capacity units at reasonable investment and subsequent low maintenance cost. Your service facilities have always been excellent!"

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent and permanent power-belt or gravity conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!

OLIVER

Farquhar CONVEYORS

POWER-BELT AND GRAVITY CONVEYORS

FREE! "Owners Report"—book of case histories showing typical money-saving conveyor installations.

MAIL COUPON FOR YOUR COPY

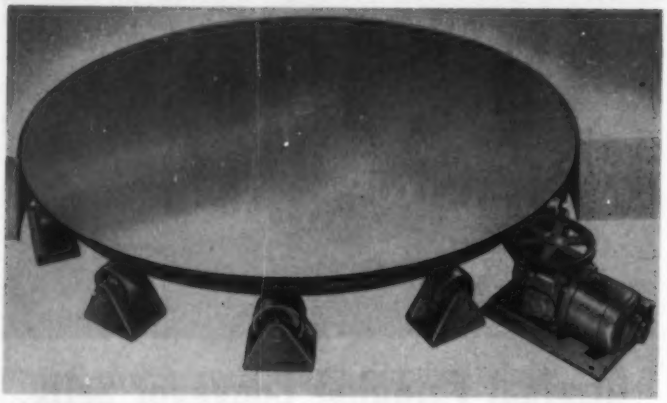
THE OLIVER CORPORATION
A. B. FARQUHAR DIVISION
Conveyor Dept. b-36, York, Pa.

Gentlemen:
Please send me my free copy of "Owners Report."

Name .....
Firm .....
Address .....
City ..... Zone ..... State .....

new machinery and supplies

PIT AND QUARRY



• Turntable

An industrial turntable has been announced by The Chase Foundry and Manufacturing Company, Columbus, Ohio.

The turntable is made in diameters up to eight feet and in capacities of up to 10 tons. It features positive self-aligning mesh gear drive, totally enclosed gear reduction unit, anti-friction bearings, remote push-button control for forward, stop and reverse and easily accessible lubrication fittings.

The turntable needs only a 15-in. deep pit and is equipped with a band of steel completely circling the table. It is suggested for turning rolling stock, trucks, autos, and loads of all kinds.

• Conveyor Scale

A scale for continuously weighing material being conveyed on a belt conveyor is being manufactured by the Sintering Machinery Corporation, Netcong, N. J.

The "Transportometer" uses a free-floating suspension that is mounted so that lateral or longitudinal belt motion is eliminated. The weight integrator is completely mechanical and automatically records the product of the belt speed and the weight of the material on it.

The Transportometer can be mounted on any new or old conveyor with a minimum of alteration. Optional equipment includes remote totalizing or rate indicating, chart or tape recording, and controls for regulating feeding equipment or for delivering a set quantity of materials.

• Gusseted Valve Bag

A gusseted valve-type multi-wall bag has been introduced by the Kraft Bag Corporation, 630 Fifth ave., New York 20, N. Y.

The "Kraft-lok" bags have a valve that is an integral sleeve which performs well on standard filling machines and gives cleaner filling with tighter closure. The new bag has the appearance of standard valve bags before and after filling.

• Metal Detector

A metal detector especially engineered for quarries and mines has been announced by the Industrial Equipment Section, RCA Victor Division, Radio Corporation of America, Camden, N. J.

The new device is normally installed between the primary and secondary crushers. It consists of two units, the detector which creates a frame through which the material must pass, and the control.

The detector is a weather-proof frame made in two sections for ease of installation. It surrounds the conveyor carrying the material to be inspected. The coils in the frame are adjusted to detect any piece of metal, magnetic or non-magnetic, that is large enough to damage the crushing machinery. The electrical charge caused by the passage of the metal through the detection aperture can be used to activate any kind of signaling or control device. It will operate on belt speeds up to 600 f.p.m. and needs only 115-volt current for operation.

• Aerial Tower

A personnel lift that provides a 100-ft. reach has been built by Mobile Aerial Towers, Inc., Fort Wayne, Ind.

The unit consists of a 44-ft. lower boom and a 48-ft. upper boom which are raised from horizontal to vertical by hydraulic arms, controlled from the operator's platform at the end of the upper boom. The booms are mounted on a turntable that may be power rotated through 280 deg. Hydraulically operated outriggers have a spread of 19 ft. from pad to pad. With the upper boom in a horizontal position the rig has a reach of 58 ft. The platform will support a live load of 500 lb. in any position.

The tower which weighs 6½ tons can be mounted on any large truck chassis. The hydraulic pump is operated by its own diesel or gasoline engine. The model illustrated, the "100," was constructed for roof scaling in a limestone mine with a 90 ft. ceiling.

• Variable Speed Drive

A variable speed drive in ½, ¾, and 1 hp. capacities has been developed by Reeves Pulley Company, Columbus, Ind.

The "Flexi-Speed" drives may be mounted in almost any position around the driven shaft and may drive in any direction. They can deliver any speed within a ratio of 8 to 1. The speed control handle may be located in any of eight positions perpendicular to the motor shaft or parallel to it. Six different length belts accommodate a variety of shaft center distances.

• Tractor Loader

A line of tractor loaders has been placed on the market by the Jaeger Machine Company, Columbus, Ohio.

The line of "Load Plus" loaders includes 12 cu. ft., ⅝ cu. yd., 1 cu. yd.,

and 1½ cu. yd. capacity models. The loaders are operated by hydraulic controls.

The loaders have torque converter drive that automatically applies power when needed to enter material and fill the bucket without the need for shifting gears. The load is centered on the front drive wheels for greater traction. Steering is by the rear axle with power booster, which permits short turns. Power is supplied by a 55-hp. gasoline or diesel engine, through a five-speed transmission and Fuller torque converter. A single reversing lever changes direction without shifting gears, and gives each reverse gear about 50 percent greater speed than its forward counterpart.

The bucket is wider than the tires to permit close work. It is crowded 13 in. forward when being raised to obtain a full load. Dumping clearance is over 8 ft.

Clark Equipment Company acquired all the capital stock of The Ross Carrier Company, Benton Harbor, Mich. Michigan Power Shovel Company, a subsidiary of Ross Carrier Company, is included in the transfer.

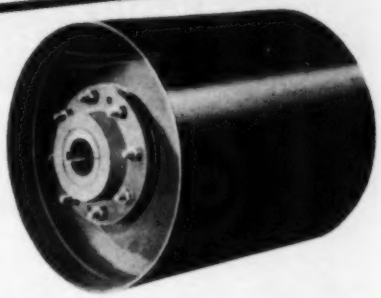
For
PEAK PULLEY EFFICIENCY!

WOOD DALE

CONVEYOR, POWER and ELEVATOR PULLEYS with

"Friction Drive" HUB

(Patent applied for)



Here's the "$64 Answer" to pulley problems!

WOOD DALE All Steel Pulleys feature a Friction-Drive compression-type hub that assures adequate driving torque, and also prevents pulley travel along the shaft under heavy stress loads. Hubs are easy to mount or dismount, and may be used on all standard pulleys. Supplied with standard keyways. Special hex lock nuts prevent hub from loosening on shaft.

Specify WOOD DALE Pulleys for uninterrupted high-economy, long-service operation.

WOOD DALE MACHINE & MFG. CO.
34 Commercial Ave. • Wood Dale, Illinois
Our Bulletin has full details — Write today

What's unusual about this machine?

There are 265 wires in this particular rope construction. That means 265 individual moving parts.

The 8 different sizes of wire are all drawn to precise diameters. Each wire is protected with lubricant applied during fabrication of the rope.

Macwhyte makes a thousand and one ropes to meet the needs of every type of equipment. Each is built with the exacting care that long, low-cost service demands. Prompt recommendations on request.

GET THE RIGHT ROPE FOR YOUR QUARRY EQUIPMENT

Macwhyte 6 x 36 WS PREformed Right Lang Lay Monarch Whyte Strand with IWRC.

MACWHYTE WIRE ROPE

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Ask for G-15 Handbook

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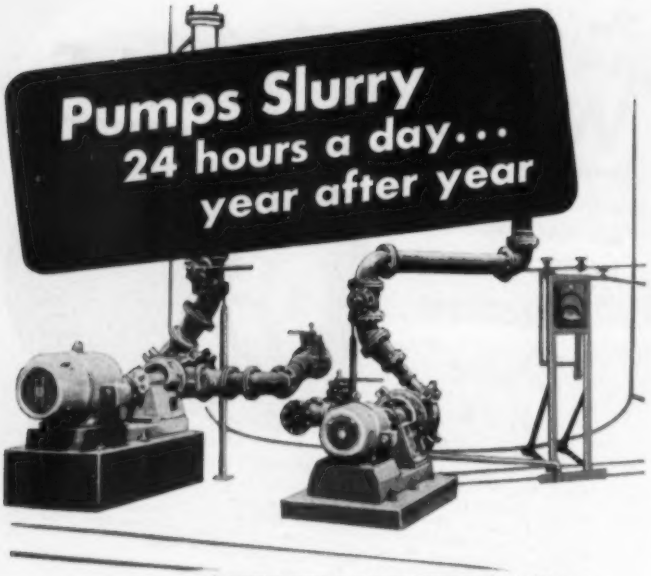


● MORRIS TYPE R SLURRY PUMP at the left is on continuous 24-hr. duty delivering 1000 GPM of a 170° lime slurry at 100' head. Fifty-HP motor operates at 1180 RPM. Intermittent-duty pump at right delivers 200 GPM at 50' head with 7½-HP motor turning at 880 RPM.

In slurry-handling operations, "long-term service" is a meaningless claim unless the pump will work day-in and day-out with a minimum of maintenance time, trouble and expense

Morris Type R Slurry Pumps—with an established reputation for longer life—also incorporate in their design exclusive features which result in easier installation . . . fewer interruptions to service...less overhaul...fewer replacements.

To provide uninterrupted service . . .

The gland is under suction pressure only. This reduces leakage and dilution . . . keeps harsh abrasives out of the stuffing box . . . practically eliminates packing troubles.

There are no internal studs or bolts. Caustic and corrosive solutions cannot seep past threads and cause maintenance headaches.

To make installation and dismantling easy . . .

Shell is interchangeable for right or left hand rotation. Suction and discharge nozzles can be rotated around the axis of the pump to a total of 72 different locations.

Impeller removed without disturbing the piping. You simply loosen 4 *outside* clamping bolts and pull off the end cover. This feature alone saves considerable time and labor.

● *Free Service.* Morris Engineers will be glad to recommend the pump best suited to your needs for size, capacity, etc. Send necessary data today . . . include request for Bulletin 181.

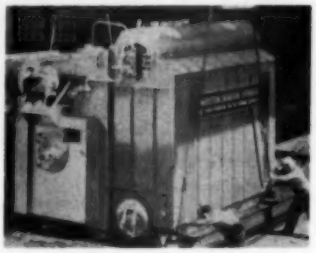
MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

● Water-Tube Boilers

A line of assembled water-tube boilers is being offered by Combustion Engineering, Inc., 210 Madison Avenue, New York 16, N. Y.

The "C-E Package Boiler, Type VP" is a compact unit designed for steam generation in the medium pressure range (to



250 p.s.i.) and for steam capacities from 4,000 to 30,000 lb. per hour.

The design is a two-drum, vertical-bent-tube arrangement with a water-cooled furnace in front of the convection surface. It is adapted for pressure firing of oil or gas alone or in combination. The boiler is completely assembled and shipped as a unit with firing equipment, forced draft fan, and automatic controls. The forced-draft fan supplies air at a pressure high enough to overcome the draft loss through the boiler so that neither a high stack nor an induced draft fan is needed.

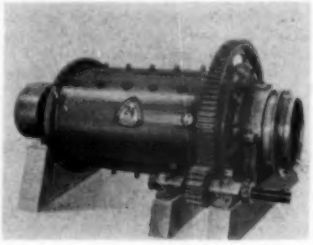
Automatic controls adjust the air and fuel supply to fluctuating loads and provide protection from flame failure, excessive steam pressure and low water level.

● Convertible Ball Mill

A 30-in. ball mill that can be converted to a rod mill or have the discharge opening varied to suit changing conditions is being made by the Denver Equipment Company, 1400-17 Street, Denver, Colo.

The "Ball-Rod Mill" is available in 18, 36, 54 and 72 in. lengths. Short mills may be lengthened by 18-in. additions until the 72 in. limit is reached. The seam gearing is used on all sizes.

The discharge opening in the trunnion can be changed to small, medium or large by installing a different size throat liner in the trunnion. Grate liners may be used by installing proper head and throat liners. These make the mill an extremely flexible unit particularly in regrind circuits where varying conditions are encountered.



• Safety Hat

A "Super-Tough" hat that is composed of one piece of lightweight moisture-proof plastic has been announced by Willson Products, Inc., Reading, Pa.

The hat, which passes all required tests for impact-resistance, pierce-resistance, and dielectric strength, is made of vinyl plastic in two weights. Both have genuine leather sweatbands attached to the hat by six suspension points molded into the hat. The shape of the hat has

been designed to deflect either falling or flying objects, and the clearance between the hat shell and skull provides for air circulation as well as additional safety. The standard color is green but red, yellow, brown and white are available.

• Loading Platform

An automatic loading platform for handling loads between truck floor and loading dock has been developed by the Field

Engineering Company, 66 Foote Avenue, Jamestown, N. Y.

The "Load-O-Matic" is started from the loading dock when the wheels of a loaded handling truck run over a switch in the floor of the platform. This causes the platform to be raised hydraulically until a leveling ramp stops the mechanism when the platform is level with the truck. Running the empty truck back over the platform causes the lifting device to reverse itself and lower the platform. The platform has a lift of 30 in.

WALTER P. LEWIS, a retired tests and materials engineer for the Alpha Portland Cement Company at Martins Creek, Mo., died recently at his home in Philipsburg, N. J. He was 80 years of age.

Controlled Avalanche Hits This Conveyor Belt!!

Falling rocks land softly, move surely on
Impact-Cushioning REPUBLIC SHOCK ABSORBER BELT

Ten-inch rock dropping from a height of two feet makes quite an impression on a conveyor belt. Multiply this impact many thousand times and you have a rough idea of what happens at National Lime & Stone Company's Carey, Ohio, Plant, where Republic Shock Absorber Belting continuously handles tons of sharp-edged limestone. The loads are catapulted at right angles from one conveyor to the next. But the jagged stones are robbed of their destructive force by a subsurface cushion of resilient rubber compounds that defy puncture, cutting and abrasion. Inner belt structures are further protected by impact-deadening rubber, cut-resisting rubber covers, mildew-proofed carcass fabrics and skims of resilient rubber that give individual plies plenty of "flex room." On this particular installation, Republic Shock Absorber **trebled** conveyor belt life over previous belts used. On other jobs, Shock Absorber has produced even better results. Shock Absorber is a patented Republic product . . . one you should know about! Write today for full facts.

HERE'S WHY SHOCK ABSORBER OUTLASTS ORDINARY BELTS 3 TO 1

ORDINARY BELTING

Impact jars entire structure. Strain on carcass fabrics causes premature belt failure.

SHOCK ABSORBER BELTING

Thick subsurface cushion absorbs impact, safeguards carcass. RESULT—more service, fewer breakdowns!!!

Your local Republic Distributor can help you save money and time on all problems concerning Industrial Rubber Products. Write us now for his name and address.

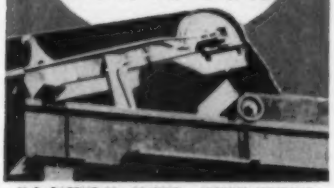
Since 1901

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

Cedarapids
Built by IOWA
Schrock
MOTORIZED HEAD PULLEYS Slash CONVEYOR DOWNTIME 70% to 90%



U.S. PATENT No. 3548399 — OTHERS PENDING

HERE'S WHY!

- No chains, sprockets, sheaves, out in the weather and dirt!
- No chain idlers to keep adjusted or oiled!
- No V-belts to be continually checked, adjusted and replaced!
- No shafts and drives to service and lubricate!
- No motors exposed to damage or weather!

Everything CONTAINED within the pulley!

IT'S *motorized* to eliminate expensive upkeep and cut downtime to the barest minimum on all belt conveyor or belt-bucket elevator operations. *All moving parts are inside the pulley,* enclosed and protected by the pulley shell from weather, dirt and damage. Operation is simple...the pulley shell rotates around the electric motor and reduction gears, which are held stationary by a torque arm attached to conveyor frame. Compact, easy to install, *economical* . . . get complete details from your nearest distributor, or write for Bulletin MP-1 today!

Built for sale in Arizona, California, Nevada, New Mexico, Southern Oregon, Southwestern Utah and Texas by

YUBA MANUFACTURING CO.
(Pulley and Sprocket Department)
Benicia, California

IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

trade notes

The Heil Co., Milwaukee, Wis., announces the appointment of John T. Mains as sales representative for the Denver district. The office is located in the Colorado Building, Room 625, Denver.

R. G. LeTourneau, Inc., Peoria, Ill., has announced the promotion of J. A. Vincent to the position of eastern area sales manager and H. R. Gilmore as district sales representative for southeastern United States.

Three new district managers in the mid-west, and two assistant district managers in the southern area have been appointed in the U. S. Tires Division of United States Rubber Company, according to an announcement.

Edwin V. Murphy, formerly assistant district manager at Chicago, has been named district manager at St. Louis; Harry E. Collins, formerly assistant manager of truck tire sales in New York, becomes district manager at Minneapolis; and Harold U. McGee, who had been in truck tire sales at Kansas City, has been appointed district manager at Oklahoma City.

Wilburn B. Hooper, formerly in truck tire sales at Charlotte, N.C., has been transferred to San Antonio as assistant district manager. J. C. Barrows, truck tire salesman at Atlanta, now becomes assistant district manager at that branch.

A. A. Shantz, general parts and Service manager of GMC Truck and Coach Division, has been appointed assistant general sales manager—trucks, it was announced recently.

In his new capacity Mr. Shantz will have jurisdiction over regional and zone activities, national fleet sales, government sales, truck technical service and parts and accessories merchandising.

N. George Belury has been elected a vice-president of American Brake Shoe Company it was announced recently. Mr. Belury, who continues as president of the Engineered Castings Division, has been with the company since graduating from Purdue University in 1937. He served in the sales department of the Brake Shoe and Castings Division before transferring to Engineered Castings sales in 1947.

Harold M. Winton, training director for the mechanical goods division, United States Rubber Company, has been named to the post of sales development manager, it was announced recently. His new duties will include development and preparation of materials and programs to increase the effectiveness of the branch and commodity sales organizations. His department will be responsible specifically for training of sales personnel, assembling of catalogs, sales promotion aids, and supervision of demonstrations, presentations and sales meeting programs.

James A. Schoenstein has been appointed sales representative in the Texas area of the Southern Division of Arkell and Smiths. Mr. Schoenstein has replaced W. F. Nesbit who was recently appointed Eastern Division Sales Manager.

T. R. Cockerham

J. A. Schoenstein

T. R. Cockerham has joined the Arkell & Smiths Southern Division sales force, and will represent the company in the Florida Territory. Mr. Cockerham was associated with the Brown Paper Industries, West Monroe, La. He is replacing T. F. Sheridan who has been transferred to the Mobile Office.

W. W. Kingman

The appointment of William W. Kingman as general sales and advertising manager for Highway Equipment Company, Cedar Rapids, Iowa, has been announced.

Mr. Kingman has recently been Chicago branch manager for Illinois Contractors' Machinery, Inc. Prior to that he had been sales manager for the Manufacturing Division of the Maxon Construction Company, Inc., Dayton, Ohio.

The Frank G. Hough Co., Libertyville, Ill. has announced the appointment of G. A. Tamblyn as sales manager. Mr. Tamblyn has been with the company 11 years and has been assistant sales manager since 1948.

Three changes in its field sales organization have been announced by General Electric's Trumbull Electric Department, Plainville, Conn.

J. E. Kerby, for the past two years manager of Trumbull Electric's Southwest District, has been named manager of the newly created West Central District, with headquarters in Kansas City. This new district will cover the entire states of Kansas and Colorado, and parts of Oklahoma, Arkansas, Wyoming, New Mexico and Missouri.

A. P. McGraw, a Trumbull sales representative in the South Carolina area, has been named manager of the Southwest District, with offices in Houston. The Southwest District covers all of Texas and parts of New Mexico, Oklahoma, Mississippi, Alabama, Arkansas, Louisiana and Florida.

J. E. Van Effen, who returned recently from a tour of duty with the U. S. Air Force, has been named manager of the newly established Cleveland District, with headquarters in Columbus. This new district will include parts of Ohio, Pennsylvania and West Virginia.

Appointment of R. G. Myers as southwestern district manager of the Davey Compressor Co., Kent, Ohio, was announced recently. Mr. Myers will be in charge of sales and service of Davey portable, industrial stationary and truck-mounted compressors in Texas, Oklahoma, Louisiana, Arkansas and New Mexico.

The appointment of M. J. Ross as export manager, Quaker Rubber Corporation, Division of H. K. Porter Company, Inc., Philadelphia, Pa., was announced recently. He will be in charge of all export sales for the company.

Donald B. Palmer Jr. has been appointed bituminous sales engineer for Pioneer Engineering Works, Minneapolis, Minn. He will cover the sales of asphalt plants and pavers and stabilizer plants in the United States and Canada from Minneapolis, serving principally as a specialist to dealers and representatives.

W. A. "Bill" Kratzert, former Florida assistant state highway engineer, has joined Universal Concrete Pipe Co. as state engineer representative. He will serve the Universal plants and offices in Florida.

L. M. Case has been named assistant manager of rock drill sales for Le Roi Company, Milwaukee, Wisconsin.

John Brandenburg has been appointed central sales manager of the American Manganese Steel Division of American Brake Shoe Company.

A graduate of Yale, Mr. Brandenburg joined the Company in 1930 as an apprentice and advanced through various production positions to plant superintendent. In 1934 he transferred to the Amsco sales department representing the export division and Brake Shoe and Castings Division.

Hugh J. Beach, president of the Flexible Steel Lacing Co., Chicago, died recently in his home in Glen Ellyn, Ill. He was 60 years old.

He started working for the Flexible Steel Lacing Co. in 1912 and in 1930 became president, which position he held till his death. He was very active in every phase of the business and was an authority on metal fasteners for conveyor and transmission belts.

Barnes and Reinecke, Inc., Chicago engineering company, specializing in mechanical research and development, was acquired April 6th by Joy Manufacturing Company, Pittsburgh, Pa.

According to J. D. A. Morrow, president of Joy Manufacturing, and James F. Barnes, president of Barnes and Reinecke, who made the announcement jointly, Barnes and Reinecke will continue to operate under its present name and with its present personnel as a subsidiary of Joy.

John R. Howell and Robert T. Dudley have been appointed regional sales managers for Sterling Electric Motors, Inc. according to a recent announcement. Mr. Howell will serve as sales manager for the western part of the United States and will operate from 5401 Telegraph Road, Los Angeles while Mr. Dudley will serve as sales manager for the Eastern areas and will maintain an office at 6842 Ridgeland Ave., Chicago, Ill.

Robert H. Pearson, who has been associated with Gardner-Denver Company for 37 years, is retiring as a vice-president, and will move to Denver to assume management of Air Rentals, Inc., a newly formed equipment distributor organization.

The Osgood Company, and The General Excavator Company, Marion, Ohio, announce the appointment of George N. Volz, Portland, Ore., as division sales manager for the northwestern states and provinces of Canada. Mr. Volz has served in a similar capacity for the John Roebling Co.

Promotion of John W. Senger to the position of purchasing agent at Hyster Company's Danville, Ill., plant has been announced. At the same time the company announced the appointment of Jack Cavanaugh to the position of assistant purchasing agent.

The combination of Allis-Chalmers district and branch office territories of Denver, Salt Lake City, Phoenix, El Paso, and Spokane into the Rocky Mountain Region with headquarters at Denver has been announced. Richard D. Moody, manager of the Los Angeles district office, has been appointed manager of the new region. Successor to Mr. Moody as manager of the Los Angeles district office is Richard L. Engel, who had been a representative in that office.

The appointment of J. C. Scott as new product sales manager of Fruehauf Trailer Company has been announced.

Get the Facts on

ATLAS
PORTABLE BELT CONVEYORS

Model 125 Heavy Duty Portable Belt Conveyor

Atlas conveyors will do the job faster... safer... and at lower maintenance cost for you.

Atlas modern designed units insure

- High capacity
- Smooth, quiet operation
- Long service life
- Low maintenance costs

Model 125 — 24" Belt Conveyor 60 feet long delivering gravel in the plant of Oscar Fortune Co. Kenney, Ill.

To: ATLAS CONVEYOR CO.
Clintonville, Wisconsin

Please send me folder on Model 125 Belt Conveyor

Name .....

Street .....

City, State .....

YUBA PLACER DREDGE DIGS, TREATS, STACKS 18,000 TONS GRAVEL DAILY...

This placer dredge with 18 cu. ft. buckets digs to 125' below water, averages better than 22 hours running time daily. Intricate treatment equipment on board limits digging to only 18,000 tons of gravel per day. For sand and gravel digging only, an 18 cu. ft. YUBA dredge can produce as much as 40,000 tons daily.

5¢ Per Ton

YUBA gold dredges of this type can be converted readily to produce and size gravel at total operating costs substantially under 5¢ a ton. One big advantage—they float in their own ponds and excavate gravel without lowering surrounding water levels.

Long Operating Life

With YUBA dredges you get both low production costs and long operating life—many YUBA dredges are operating efficiently after 25 years or more of rough service.

Consult YUBA NOW. We will design and build a new dredge to fit your ground; or help you find a used dredge, and move, redesign and rebuild it. Wire, write or call us—no obligation, of course.

Profusely illustrated, 40-page brochure, "YUBA Dredges," yours for the asking.

YUBA DREDGES — PROVEN PERFORMANCE

YUBA MANUFACTURING CO.

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SHAW DARBY & CO., LTD., 16 & 19 LEADENHALL ST., LONDON, E. C. 3.

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Motorola Communications and Electronics, Inc., recently announced that the southwest regional office has been moved from 6310 Denton Drive, Dallas, Tex., to 171 Parkhouse Street in the Trinity Industrial District of the same city. E. L. Falls, Jr., regional manager, is in charge of the new office.

The regional office serves the states of Texas, Oklahoma, New Mexico, Arkansas and Louisiana in the distribution of fixed, mobile and portable two-way radio; microwave and power line carrier point - to - point communication systems; and industrial supervisory control systems.

The S. K. Wellman Company has moved into its new Bedford, Ohio, plant, according to an announcement. This present location centralizes all of the equipment formerly housed in three separate plants and warehouses, plus improved production machinery to accommodate an expanded schedule.

D. J. Byrd has been appointed division assistant sales manager of Wayne Division, Gar Wood Industries, Inc., Wayne, Mich., according to an announcement, and Wray Kephart has been appointed division purchasing agent.

Stockholders of Combustion Engineering-Superheater, Inc., at their annual meeting voted to shorten the company name to Combustion Engineering, Inc.

At the same time the board of directors elected the following officers to new posts: Joseph V. Santry, president, was elected chairman of the board and will continue as chief executive officer; Samuel G. Allen retired as chairman of the board but will continue as chairman of the executive committee; Martens H. Isenberg, executive vice president, was elected president, succeeding Mr. Santry; George D. Ellis, vice president and controller, was appointed vice president in charge of finance, succeeding Harold H. Berry who has reached the retirement age. Mr. Berry will continue as a director.

F. M. Galloway has been elected vice-president in charge of research and development, Quaker Rubber Corporation, Division of H. K. Porter Company, Inc., Philadelphia, it was announced.

M. Galloway joined Quaker in 1933 as assistant chemist and has been successively chief chemist and technical superintendent until his present promotion. He has been a member of the board of directors since 1947.

The appointment of new branch managers of The Howe Scale Company, Rutland, Vt., was announced recently. Gerald J. Devine has been appointed New York branch manager. Edward L. Ervin has been promoted to Buffalo branch manager. He was formerly a sales representative.

Martin Meyer has been appointed general sales manager of Sauerman Bros., Inc., Chicago, Ill., to fill the vacancy caused by the death of Dwight D. Guilfoil on May 3. Mr. Meyer joined the Sauerman organization in 1943. He has been assistant sales manager since 1948 and is a director of the company.

The Timken Roller Bearing Company has announced a multi-million dollar expansion and program for the Bucyrus, Ohio plant.

A new toolroom will be built to house the maintenance, repair, electrical, sheet metal departments, and all stores. A locker room and cafeteria building will be constructed and an important part of the program is a new boiler plant.

New machinery and production equipment for the manufacture of bearing parts will be installed in the Bucyrus plant and should be in full production by the end of 1954.

The cost of the new manufacturing equipment for this project will be approximately two million dollars. Timken Company officials estimate that the construction program can be completed by the end of this year. The proposed production facilities are expected to be in full operation by the end of 1954.

Fred B. Shaw has been named sales manager of the Bucket Department of The Wellman Engineering Co., Cleveland, Ohio, and will supervise the national distribution of the company's line of clamshell and dragline buckets and grabs.

Arkell & Smiths have announced the appointment of Henry B. Dawson, Jr., as a sales representative in their Southern Division, working out of the Mobile, Ala. office.

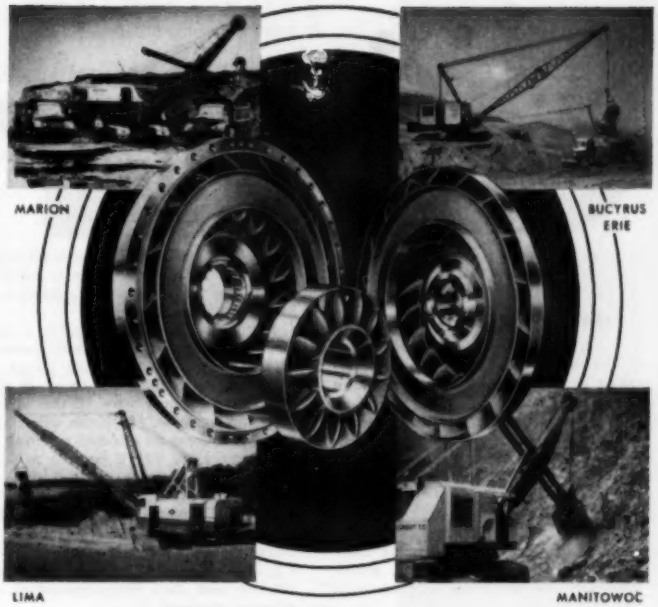
E. M. "Woody" Woodrich has recently joined the Chase Bag Company and will handle the Oklahoma territory.

R. B. Warren has been named manager of Industrial Products departments, Goodyear Tire & Rubber Co., Akron, Ohio. L. W. Adams has been promoted to Warren's former post as Southern sales manager, Industrial Products division.

Two executive changes were announced by the Chase Bag Company, recently. Robert N. Conners, vice-president and general sales manager and a member of the Board of Directors, has been appointed executive vice-president. William N. Brock, assistant general sales manager, has been named general sales manager.

Appointment of K. L. Fitts as manager of off-highway truck sales for Mack Motor Truck Corporation has been announced. Mr. Fitts joined Mack in 1945 as a national accounts salesman, and in 1951 was made assistant manager of that division. He succeeds P. J. Fleming who recently retired after a long career.

Edward T. Day has been named manager of branch sales for mechanical goods division, United States Rubber Company, it was announced recently. At the same time Matthew J. Delehaunty, was appointed manager of industrial sales. Both men will be headquartered in the company's New York offices.



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Legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Southern Readers' Legal Questions

The writer has just returned from rather extensive travels in the Southern states, during which I talked personally with numerous buyers, sellers, processors, and producers of non-metallic mineral products. During many conversations I learned that a great majority of readers of PIT & QUARRY have special legal problems, some of which they submitted to me. I shall answer those I consider the most important and those whose answers affect all buyers, sellers, processors and producers of nonmetallic mineral products.

Breach of Contract

A reader asked this question: "If a seller of non-metallic mineral products breaches a valid contract and refuses or fails to deliver merchandise purchased by the buyer, what is the best and most logical course for the purchaser to follow? What acts of a seller are considered breaches of contract?"

First, it is important to review a rule of law well settled among legal authorities. This rule is: A buyer always is privileged to cancel a contract if the seller breaches any part of the agreement, for example, (1) if the seller fails to make delivery on the date specified in the contract; or (2) if he fails to ship the agreed quantity or quality of merchandise; or (3) if he fails to make shipment by a common carrier specified by the buyer; or (4) if the seller refuses to accept the kind of payment agreed upon; *e.g.*, the seller agreed to ship on open account and then later demanded an advance payment.

The most unusual litigation involving the latter point of the law is illustrated in the recent case of *Warsaw v. Woodruff*, 207 N. W. 421.

In this case it was disclosed that the goods were sold for cash, but when the seller attempted to make delivery, he wrote a letter to the buyer instructing the latter to take up the bills of lading from a bank specified by the seller.

The buyer cancelled the contract, refused to accept delivery, and sued the seller for damages, contending that the act of the seller in demanding him to make payment in the prescribed manner was a breach of the contract.

The court held that if a seller specifies or demands the manner in which the payment shall be made, he commits a breach of the contract for which he, the seller, is liable. This court said:

"If one of the parties of the contract notifies the adversary party that he will not perform unless such adversary assents to the modification of the contract by the addition of certain new terms, such conduct amounts to a renunciation of the contract."

Of course, this illustration is given merely to point up the well known law that failure of a seller to fulfill any one of his assumed obligations is a breach.

The instant a seller breaches a valid contract of sale, the buyer is privileged to rescind the contract. He has choice of doing either of these three things: (1) he may refuse to accept the goods and sue the seller for damages equal to the financial loss resulting from the breach; (2) he may file suit and compel the seller to fulfill the exact terms of the agreement; (3) he may notify the seller of the breach and later enter into a supplementary agreement to accept delivery, on the same or different contract terms.

Generally speaking, the amount of damages collectable by a purchaser from the seller for breach of a sale contract is based upon the financial loss suffered by the buyer, including his loss of profits and his expense and trouble of repurchasing the merchandise elsewhere.

For comparison, see the leading case of *Hughes v. Rendle Corporation*, 171 N. E. 236. Here a company and the owner of motor vehicles entered into a written contract by the terms of which the latter agreed to haul cement during the entire year for 85 cents per ton. The contract also provided that the company would pay the hauler in full within five days from final delivery of each shipment. The company paid only $400 of the hauler's bill of $568.23 for a shipment within five days. Then the hauler refused to transport other cement at the price of 85 cents per ton on the contention that the company had breached the contract by failure to pay the entire amount of $568.23 within five days. It is interesting to observe that the higher court held that the company had breached the contract and the hauler was not required to continue during the balance of the year to haul cement for the company. This court said:

"Was the failure of the company to pay $168.23 of the $568.23, which the contract in express terms provided should be paid 'in full within five days from final delivery of each shipment' a breach

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so important as to warrant the hauler in refusing to deliver the remaining part of the cement? We think the failure of the company to pay so large a part of the total sum payable and due was not a trifling breach of the contract but was a substantial one which threw doubt upon the company's ability or disposition to make payments when due."

Authority of Salesman

Another reader asked this question: "If I give an order to a manufacturer's salesman, or sign a contract with the salesman, can the manufacturer sue me and recover damages if I refuse to accept and pay for the purchased merchandise?"

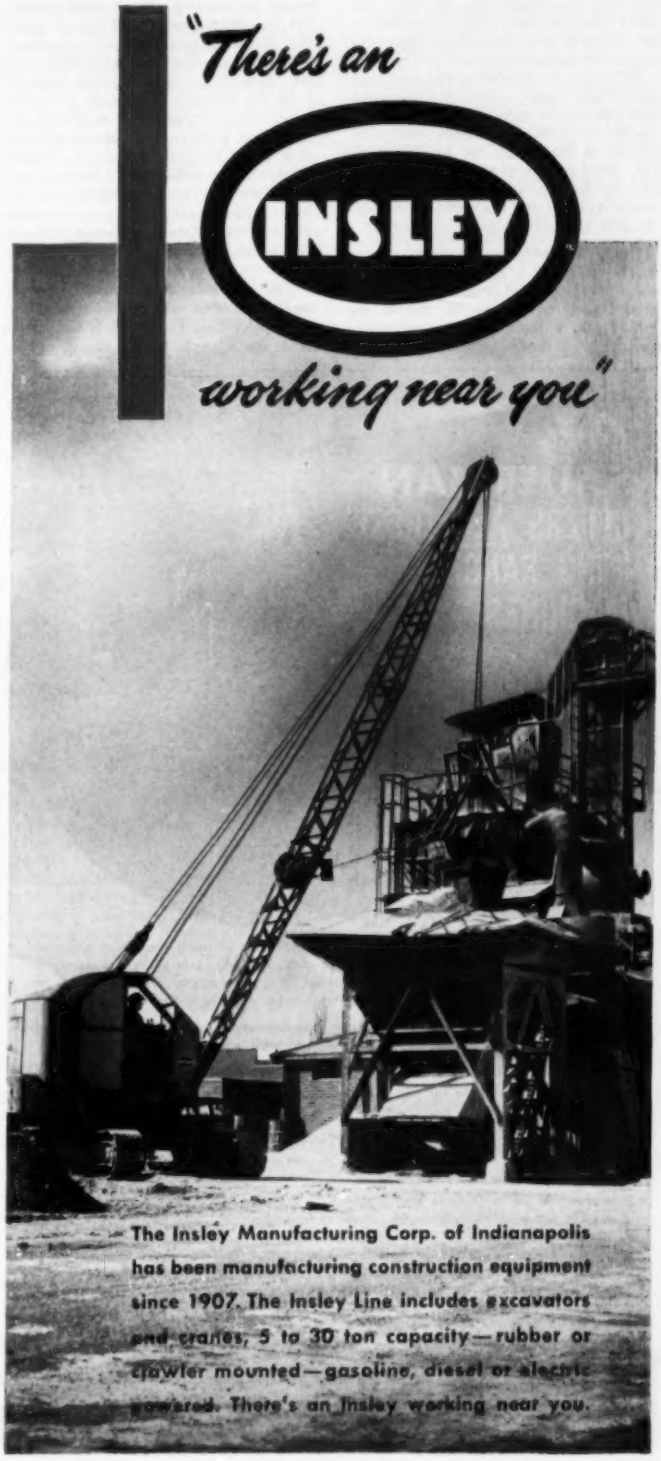
The answer to this question depends on the authority given the salesman by the manufacturer. Generally speaking, a salesman's sole implied legal authority is to accept an order or contract and send it to his employer for approval. If the employer is not satisfied with the order or contract, he may refuse to deliver the merchandise, without sending the buyer any notification. Conversely, the buyer is privileged to send his cancellation at any time before the seller acknowledges and accepts the order.

For illustration, in a leading case decided during the last few weeks, it was shown that a purchaser ordered a quantity of cement from a salesman. The purchaser's credit was not established and the salesman required a money deposit with the order. The buyer gave the salesman a cash deposit, and both the salesman and the purchaser signed the contract of sale which specified the date when shipment should be made and distinctly stated that no cancellation by the purchaser would be accepted by the salesman's employer.

The salesman mailed the order immediately to the manufacturer, who failed to acknowledge or accept it. Ten days after the order was signed, the purchaser decided that he did not want the merchandise. He wrote to the manufacturer cancelling the order and requested that the money he had paid to the salesman be returned. The manufacturer answered this communication, but refused to cancel the order or return the purchaser's deposit. The buyer filed suit to recover the deposit.

It is interesting to know that the court held the buyer entitled to cancel the order and that the seller was bound to return the buyer's deposit. This court explained that a buyer of merchandise may without liability cancel an order given a salesman, if the cancellation reaches the manufacturer before the latter acknowledges receipt of the order.

In still another leading case, *Willis*, 41 So. 675, a buyer gave an order to a salesman in September for a quantity of merchandise. The seller failed to acknowledge receipt of the order, and in November the purchaser cancelled the order. The seller filed suit for damages, contending that his failure to notify the purchaser for three months that the merchandise would not be shipped proved that he intended to accept the order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and ship the merchandise. However, the court held the buyer fully within his legal rights in cancelling the order under these circumstances, saying:

"There is no time, from the time such an order is received until it is accepted, that the person giving the order cannot countermand it. It is plain that mere silence on the part of the plaintiff (seller), after receiving the order, without any act tending to show an acceptance, would not cut off the right of the defendant (buyer) to cancel the order."

Verbal Guarantee

The owner of a gravel pit asked this question: "At various times I have purchased used equipment for use in my gravel pit. I have a case now where the seller verbally guaranteed that I would be satisfied with a used tractor, but the written contract I signed stated that the seller was giving no guarantee. The tractor is entirely unsatisfactory to me. Can I sue and recover damages from the seller?" According to a late higher court decision, the answer is yes.

Modern higher courts consistently hold that under all circumstances a sale contract must be fulfilled by a seller strictly according to the "intentions" of the buyer and seller when the contract was made. A written contract may not be conclusive, as to the real "intentions" of the parties.

For example, in *Funkhouser Equipment Company v. Carroll Gravel Company*, 168 Pac. (2d) 918, it was shown that the Carroll Gravel Company entered into an agreement in writing to purchase a used "Brown Hoist Crane on Crawlers" for $2,500. The machine was delivered, but the Carroll Gravel Company paid down only $500. The seller sued for the balance, and proved that the written contract contained a clause to the effect that the seller gave no guarantee on the equipment.

During the trial the counsel for the gravel company proved that its official signed the written contract on October 28, but that on October 18 he had explained to the seller that he had had no experience in the use of cranes and needed it to do the heavy lifting necessary in the production of sand and gravel; he said that it was necessary that the crane could be moved from place to place under its own power, so that it could be used at both sand and gravel pits. When the crane was delivered, it was so defective that it could not be moved under its own power from place to place.

Although the seller contended that the Carroll Gravel Company was obligated by the terms of the written contract, the higher court held otherwise and said:

"Where a written instrument is signed by the mistake of one party caused by the fraud of another, it may be reformed to state the real agreement of the parties."

In other words, this higher court held that irrespective of the contents of a written contract, the contracting parties are bound by all verbal agreements and guarantees made before the written contract was signed.

Valuable Consideration

A reader asked this question: "In many contracts, deeds, etc., there appears the phrase 'one dollar and other consideration'. If the purchaser does not pay the seller this one dollar, does this render the contract void?"

According to a leading higher court decision, a contract is valid and enforceable although neither party proves that he paid or received $1.00 and other valuable consideration" usually recited in a contract, deed, and other instruments.

For illustration, in *Coleman v. Whisnant*, 37 S. E. (2d) 693, it was shown that a sale contract contained the usual clause "for $1.00 and other valuable considerations".

The purchaser contended that the contract was void because the seller had not paid $1.00 and other considerations.

The higher court held that it was not necessary for the purchaser to prove that he gave the seller any such consideration. This court said:

At the common law, instruments under seal are generally held to be good as against a plea by one of the parties of no consideration, because the seal imports consideration or renders it unnecessary."

Law of Insurance

The law of insurance is important to all readers. This is so particularly because, since a review of late higher court decisions reveals that the owner or opera-

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tor of a business dealing in nonmetallic minerals may pay premiums on insurance policies for many years feeling secure; and yet if a loss occurs, there are many reasons why he may not collect insurance.

First, if for any reason an insured person increases the normal risk originally assumed by the insurance company, the insurance policy automatically becomes void and non-payable. This is an important law because the normal risk originally assumed by the insurance company may be unintentionally increased by the insured in a multitude of ways and means.

Assume that an insurance company insures a building in which is utilized electricity for power. The insurance policy may for example be automatically rendered void if, without permission of the insurance company, the insured installs a gasoline engine for main or supplementary power. The same law is effective, and an insurance policy is rendered void, if the insured misdescribes his insured building or property. In fact, any material violation of a clause in an insurance policy may automatically relieve the insurance company from paying a loss, if a clause in an insurance policy is violated. For example, it has been held that violation of a clause requiring the insured to keep his books in a fireproof safe renders the insurance policy void, and the insured cannot collect any insurance on the policy. Of course, any and all misrepresentations in an application for insurance may result in the insurance policy being declared void and invalid. This is true irrespective of the fact that the insured may have made the misstatement innocently. See *White, 144 S. 439.*

The important point is this: If in any way the insurance company's risk, assumed when the policy was issued, is increased without permission of the insurance company, the policy is void. Take, for example, the case where a business man insured his home as a dwelling and forgot to mention to the insurance company's agent that occasionally in the evenings he did business at home.

In subsequent litigation, the higher court refused to hold the insurance company liable on the loss of the residence by fire. See *Wills, 60 S.W.* (2d) 268.

Concise Review

For the benefit of readers who want to know exactly what violations render an insurance policy void, here is a review of late and leading higher court decisions:

In *Oates v. Continental,* 72 S.E. (2d) 886, the higher court held a fire insurance policy void which contained a clause that the insured would not obtain other fire insurance on the building; later the insured took out another insurance policy.

In *Burpo v. Resolute Insurance Company,* 107 N.E. (2d) 227, the higher court held that an insured is bound by false or untrue representations in an application for insurance even though the insurance company's agent filled in the blank spaces incorrectly. This renders the policy void.

In *Norris v. Pacific,* 247 Pac. (2d) 1, the higher court held that a motor vehicle liability policy does not protect the owner of the vehicle when an injury is effected by one using the automobile without authority of the owner of the automobile.

In *Branch v. United States,* 198 Fed. (2d) 1007, it was shown that a garage employee picked up a customer's automobile to take it to the garage for repairs. The higher court held that the insurance policy did not cover the employee, who used the automobile to pick up his wife and take her to a store.

In *Harris v. Security,* 251 S.W. (2d) 115, the higher court held that an insurance policy is rendered void if the insured states that he is the sole owner of the insured property, and another person has some interest in the property.

In *Hynds v. Hine,* 165 S.E. 839, the higher court refused to pay a fire loss because the testimony showed that the insured company stored inflammable materials in the building.

In *Sebring, 237 N.Y.S. 120,* the higher court held that a fire insurance policy is rendered void if the insured does anything to increase the hazard of fire. Also, see *Miller, 39 Fed.* (2d) 25, in which the higher court held an insurance policy voided after the insured stored gasoline and alcohol on the premises.

In *Conden, 156 So. 832,* the higher court held that an insurance company need not pay a fire loss because the tenant named in the policy was substituted by another tenant without giving the insurance company notice.

In *Green v. Hartford F. Insurance*

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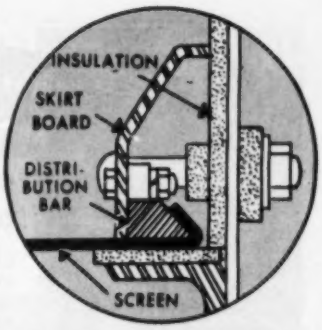

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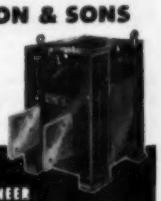

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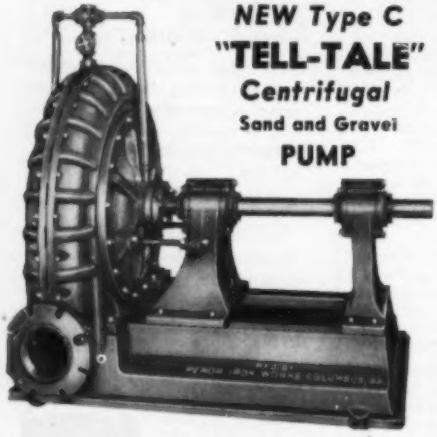

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Company, 216 N.Y.S. 315, the higher court held that an insurance company need not pay a fire loss because the insured delayed 6 weeks in reporting the loss to the insurance company.

In *Wainer v. Weiner*, 192 N.E. 497, the higher court held that an insurance policy was rendered void and that the insurance company need not pay the loss because the testimony showed that the motor vehicle owner delayed 2 months in reporting an accident to the insurance company. Also, see *Stacey v. Fidelity*, 114 Ohio St. 633. This court held that if an insured person fails to give the insurance company immediate notice of an automobile accident, the insurance company is relieved from all liability under the policy.

In *Harris v. Allstate*, 249 S.W. (2d) 669, the higher court held an automobile insurance policy void because the company owner of a motor truck falsely stated in the application for the insurance that it had had no other insurance policy cancelled during the past two years.

In *Panhandle Gravel Company v. Wilson*, 248 S.W. (2d) 779, the higher court held an insurance company liable on a motor vehicle liability policy because the driver of the truck was injured when a rock fell through the windshield while the truck was being loaded.

Injured Employee Must Prove Case

Generally speaking, an injured employee cannot recover compensation under the State Workmen's Compensation Act unless he proves, first, that the injury resulted from an accident; and second, that he was actually disabled as the result of the accident.

For example, in *De Shazer v. Nail*, 250 Pac. (2d) 456, it was shown that an employee was injured when lifting a heavy rock. In fact, testimony showed that the employee sustained a back injury in the nature of a ruptured intervertebral disc while lifting the heavy rock.

In subsequent litigation, the Supreme Court held that the injury constituted an accidental injury, within meaning of the Workmen's Compensation Act, but that an award could not be sustained in the absence of expert medical testimony that the injury and the resulting disability were caused by the accident.

Not Capital Gain

A few days ago I received an interesting letter containing the following: "Some years ago I purchased a farm near a city, and have since operated my sand-and-gravel business, and manufactured concrete blocks on a part of this property. My question is: If I sell at a profit the part of the land I do not need in my business, can I pay federal income taxes on the basis of long-term capital gains, or 50 percent of my profits? As this land is near a city, I can divide it into one- and two-acre tracts and sell it at high prices for building of homes. If I do this, can I pay only 50 percent of my profits for federal income taxes?"

The answer is: If you sell all the land you do not need to one purchaser, you

can pay federal income taxes on only 50 percent of your earned profits. However, if you divide the land into lots and sell it to a plurality of purchasers, you must pay full income taxes on your profits. This is so because the courts hold that if the owner of real property enters into the business of selling real estate, or held it primarily for sale to customers, he cannot expect to list his profits as "capital assets" and pay taxes on only 50 percent of the earned profits.

For example, in *Mauldin v. Commissioner of Internal Revenue*, 16 T.C. No. 88, the testimony showed facts as follows: a man named Mauldin owned a plot of land. His financial condition became such that he made an effort to sell this whole plot of land. However, there was no one available who had the money to pay the price asked. He was advised by certain real estate dealers that if he divided the property into small tracts he would more readily be able to sell. The land was surveyed, platted, and subdivided into 29 separate tracts of small acreage and four blocks of 88 lots. The plat was filed in the county clerk's office.

Mauldin went into the business of selling lots, and built houses in order to induce prospects to purchase his lots. He sold many lots. When filing his income tax return, he listed earned profits on the basis of a capital gain paying income tax on only half of the earned profits.

The Commissioner of Internal Revenue filed suit against Mauldin for deficiencies and penalties, claiming that the profits were not a capital gain since Mauldin was in the business of selling lots. Mauldin argued that he was not in the real estate business and did not hold the lots "primarily for sale to customers in the ordinary course of his trade or business" because he had no real estate broker's license; he never advertised the property for sale through the papers or by signs; and his personal activities were limitrd to the negotiation of sales upon the solicitation of prospective buyers or their representatives.

Nevertheless, the court held that the profits earned by Mauldin on his real estate transactions were not capital assets or long-term capital gains, saying:

"In our opinion, the facts not only justify but require the conclusion that the petitioner (Mauldin) entered upon a business of subdividing and selling the said property. In our opinion, the lots sold by petitioner (Mauldin) . . . were held by him primarily for sale to customers in the ordinary course of his real estate business of platting and selling the property, within the meaning of section 117 (a) of the Internal Revenue Code, and we so hold."

With respect to Mauldin's argument that his principal business was not real estate, the court said:

"He might have been engaged in two or more businesses and the business of selling real estate might not have been his principal business. See *Snyder v. Commissioner*, 295 U. S. 134; *Oliver v. Commissioner*, 138 Fed. (2d) 910; *Ignaz Schwinn*, 9 B.T.A. 1304, 1308."

Consulting Organization Announces 14th Handbook

The Association of Consulting Chemists and Chemical Engineers, Inc., 50 East 41st Street, New York, N.Y., has announced the 14th edition of *Consulting Services, 1953*, the silver anniversary issue of the organization's publication.

The 144-page book is divided into four sections—Classifier, Scope Pages, Unusual Laboratory Equipment Owned by Members, and Index. One copy is free; additional copies, $1 each.

According to the annual report of the Dolese & Shepard Company, Chicago, Ill., the 84th year of the concern (12 months ended December 31, 1952) was a profitable one. Net sales amounted to $2,154,995.79 and net profit was $319,-054.97. For 1951 the comparable figures were $1,754,623.04 and $17,414.66.

traffic news

CENTRAL TERRITORY RAILROADS
Freight Traffic Committee

Docket 89497 (1)—Proposed to establish on stone, fluxing of foundry melting or refractory unburned, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply from West Columbus, Ohio, to Lima, Ohio, 164 cents net ton.

Docket 89499 (1)—Proposed to establish on stone, crushed, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from North Baltimore, Ohio, to Homer and Tekonsha, Mich., 207 cents; Sherwood, Mich., 213 cents; Coldwater, and Bronson, Mich., 201 cents; and Sturgis, Mich., 191 cents net ton.

Docket 89514 (1)—Proposed to establish rate of 201 cents per net ton on crushed stone, crushed stone screenings, and crushed stone tailings, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from McVittys, Ohio, to Beaver, Fosters, Givens, Omega, Piketon, Sargents, Van Meter, Wakefield, Waverly, and Westmore, Ohio.

Docket 89515 (1)—Proposed to establish on stone, crushed, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Spore, Ohio, to the following points:

	Cents Per Net Ton
Adrian, Mich.	177
Battle Creek and Union City, Mich.	226
Clinton and Wayne, Mich.	189
Coldwater, Homer, Sturgis, and Tekonsha, Mich.	213
Plymouth, Mich.	191
Ithaca, Mich.	238
Jackson, Mich.	201

Docket 89535 (2)—Proposed to establish on dolomite, roasted (refractory dolomite, in granular form, treated or untreated, clinkered and/or burned to a dead state), carload, minimum weight 90 percent of marked capacity of the car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Narlo and Maple Grove, Ohio, to St. Louis, Mo., East St. Louis, Granite City, and Alton, Ill. 485 cents net ton.

Docket 89536 (1)—Establish on stone dust partially calcined as recovered from rotary kilns, in closed cars, minimum weight 90 percent of market capacity of

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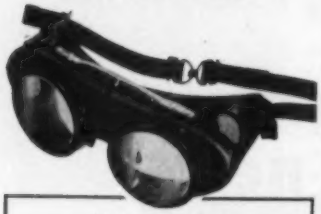

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the car from Chicago, Ill., to Lawrence, Mich., 133 cents net ton; to St. Joseph, Mich., 124 cents net ton.

Docket 89542 (1)—Proposed to establish on crushed stone, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car except that when car is loaded to full cubical or visible capacity, actual weight will apply from Georgia, Ind., to Washington, Ind., 58 cents net ton. Published to meet motor truck competition and to expire October 31, 1953. No switching charges absorbed.

Docket 89545 (2)—Proposed to establish on dolomite, roasted (refractory dolomite, in granular form, treated or untreated, clinkered and/or burned to a dead state), carload. Minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Narlo and Maple Grove, Ohio, to Chicago, Ill., and Chicago, Ill., District Stations, 363 cents net ton.

Docket 89552 (1)—Proposed to establish a rate of 348 cents on closed cars and 298 cents net ton on open cars of limestone, natural or pulverized, unburned, minimum carload weight 30 tons from Durbin, Ohio, to Barnette, W. Va., and David, Ky.

Bulleton G-7696 (Shipper)—Proposed to establish on limestone, natural, ground or pulverized, minimum weight 30 tons from Gibsonburg, Ohio, and other Northwestern Ohio Group 1 origins to Woodville Junction, Pa., $2.86 per net ton in open cars; $3.36 per net ton in closed cars, subject to ExParte 175-B increase.

Bulletin G-7705 (Carrier)—Proposed to establish on fluxing lime having no commercial value for building or chemical purposes, in bulk or in packages, carload, minimum weight 30 tons from Martinsburg, Engle, and Milleville, W. Va., Oranda, Strasburg Jct., Capon Road, and Stephens City, Va., and Bellefonte, Pa., to Verona, Pa., $3.61 per net ton, subject to ExParte 175-B increase.

Bulletin G-7721 (Carrier)—Proposed to establish a rate of $2.31 per net ton in open-top cars and $2.79 per gross ton in closed cars on crushed stone, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to visible or cubical capacity, actual weight will apply from Kimballton, Va., to South Charleston, W. Va., subject to Ex Parte 175-B increase.

Bulletin G-7845 (Shipper)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload weight 30 tons from Durbin, Ohio, to Marion, N. Y., $3.95 per net ton in open-top cars; $4.44 per net ton in closed cars, subject to ExParte 175-B increase.

Bulletin G-7852 (Shipper)—Lime as described in Central Territory Railroad tariff 516-L, ICC 4397, from Hannibal, Mo., Marblehead and Quincy, Ill., to Crane and Fayette, Ind., 31 cents per hundredweight, minimum weight 15 tons; 24 cents per hundredweight, minimum 25 tons. To Midland, Pa., 40 cents per hundredweight, minimum 15 tons, and 33 cents per hundredweight, minimum 25 tons, subject to ExParte 175-B.

Bulletin G-7881 (Shipper)—Proposed to establish on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, from Carey, Ohio, to Johnstown, Pa., $2.36 per gross ton.

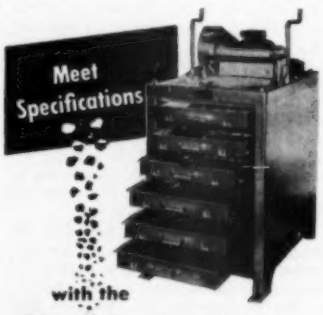
Bulletin G-7907 (Shipper)—Stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Carey, Ohio, to Johnstown, Pa., $2.36 per gross ton, subject to ExParte 175-B.

Docket IRC 511-1242—Proposed to establish rate of $1.44 per net ton on sand, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply from Sand Cut, Ill., to McLeansboro, Ill., subject to X-175-B increase.

Docket ORMV 221-11 (MRP 5077)—Lime, as described in item 505 of Agent Spaninger's tariff 382-F. ICC 1345, carload, minimum weight 25 tons, from Mosher and Ste. Genevieve, Mo., to West Point, Ky., and points taking same rates. Present, 489 cents per ton of 2000 lb. Proposed, 480 cents per ton of 2000 lb., subject to X-175-B.

NORTH PACIFIC COAST FREIGHT BUREAU

Docket NC 1644 Supplement 1 (C)—Proposed to establish rate of 7½ cents



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per hundredweight, carload, minimum 50 tons on rock, crushed, and olivine from Hamilton, Wash., to Bellingham, Wash.

Docket X NC 3206 (S)—Request to establish a rate of 325 cents per ton of 2000 lb., minimum 50 tons on limestone, carload, Bradman Spur, Mont., to Scalley, Wash.

Docket NC-3205 (S)—Request rate of 7 cents per hundredweight on limestone, ground or pulverized, in closed cars, carload from Seattle, Wash., to Everett and Tacoma, Wash. Minimum weight 30 tons.

Docket NC-3230 (S)—Request to establish on stone or rock, crushed or ground, carload from Seattle, Wash., to Calgary, Atla., 45 cents per hundredweight in open-top cars and 46 cents per hundredweight in closed cars, minimum weight marked capacity of car, but not less than 30 tons.

NORTH PACIFIC COAST FREIGHT BUREAU AUD PACIFIC SOUTH-COAST FREIGHT BUREAU

J.T.-2477 (S)—Request rate on gypsum, crude, crushed, or ground, carload, from Gerlach, Nev., to Madras, Ore., 28 cents in open cars and 30 cents in closed cars, minimum weight 40 tons.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 9448 (ERR(S) C.S.F.A. 6250—Proposed to establish on magnesite, deadburned, carload, 30 tons, Stronach and Manistee, Mich., to Birmingham, Ala., group, 57 cents, not subject to X-162-6-8.

Docket A 9514 (Southwestern Freight Bureau Proposal 63851)—Proposed to establish on limestone, ground, carload, Marble City, Okla., to Jackson, Miss., 451 cents per net ton, not subject to X-162-6-8. Through rate.

SOUTHWESTERN FREIGHT BUREAU

Docket 63761 (S)—Proposed to establish rate of 560 cents per net ton on gypsum or gypsum rock, from Sweetwater, Tex., to Opelousas, La., minimum weight 50,000 lb. or marked capacity of car used, whichever is greater, not subect to X-162-6-8.

Docket 63851 (S)—Establish rate of 451 cents per net ton on limestone, ground, from Marble City, Okla., to Jackson, Miss., not subject to tariff X-162-6-8, minimum weight as provided in item 180-Series, Southwestern Lines Tariff 162-T.

Docket 63854 (C)—Proposed to establish on agricultural limestone, from Marlo, Mosher, and Ste. Genevieve, Mo., to Lincoln, Ill., $2.27 per net ton, not subject to X-162-6-8, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply.

Docket 63867 (S)—Establish rate of 70 cents on magnesite from Carlsbad, N.M., to Chippewa, Ont., Canada, not subject to X-162-6-8, minimum weight 30 tons.

Docket 63869 (S)—Establish rates on silica sand, from Roff and Mill Creek, Okla., to Airport, La. $4.62 per net ton from Roff, Okla., and $4.54 per net from Mill Creek, Okla., not subject to X-162-6-8.

TRUNK LINE TERRITORY RAILROADS

Freight Traffic Committee

Docket TLM-2708 (Shipper)—Proposed to establish on sand and gravel, carload, taking group A in Lehigh Valley Railroad tariff ICC C-9287, minimum weight as per this tariff, from Wyoanna, Pa., to Wilkes Barre, Pa., 80 cents per net ton, not subject to ExParte 175-B.

Docket TLM-2718 (Carrier)—Fluxing lime having no commercial value for building or chemical purposes, in bulk or in packages, carload, minimum weight 30 tons, from Engle, W. Va., to Vandergrift, Pa.; from Milville, W. Va., Granda, Strasburg Junction, Capon Road, and Stephens City, Va., Bellefonte, Pa., and Martinsburg, W. Va., to Vandergrift, Brackenridge, and Brauburn, Pa., $3.61 per net ton, subject to ExParte 175-B increase.

Docket TLM-2730 (Shipper)—Proposed to establish a rate of $1.36 per gross ton on crude dolomite, carload, in open cars, not protected by tarpaulin or other protective covering, and $1.39 per gross ton on crude dolomite, carload, in closed cars or in open cars protected by tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, from Blue Bell-Devault-Williams and Cedar Hollow, Pa., to Chester Pa., and Claymont, Dela., subject to ExParte 175-B increase.

Docket TLM-2742 (Shipper)—Proposed to establish on ganister rock, not ground, in open-top equipment or in closed equipment, minimum weight 90 percent of marked capacity of car, from Latrobe, Pa., to Waynesboro, Pa., and Hagerstown, Md., $2.55 per net ton in open cars and $3.29 per net ton in closed cars, subject to ExParte 175-B increase.

Docket TLM-2749 (Shipper)—Proposed to establish on crushed stone, uncoated, in open-top equipment, not protected by tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, from LeRoy, N.Y., to Lawrenceville, N.Y.-Pa., Tioga, Pa., and Mansfield, Pa., $1.52 per net ton, subject to ExParte 175-B increase, to be issued to meet motor truck competition and expire with December 31, 1953.

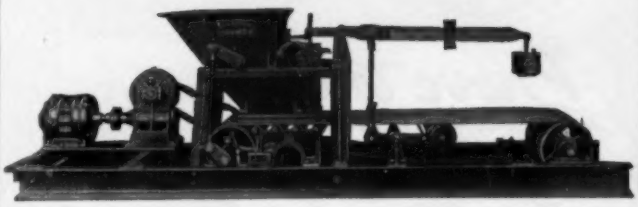
Docket TLM-2776 (Carrier)—Proposed to establish on crushed stone and stone sand, carload, minimum weight 90 percent of marked capacity of car, from White Haven, Pa., to Wilkes Barre, Pa., 80 cents per net ton, not subject to Ex-Parte 175-B increase, to meet motor truck competition and expire February 28, 1954.

Docket TLM-2777 (Shipper)—Slag (for further extraction of metal), carload minimum weight 90 percent of marked capacity of car, from Easton, Pa., to Swedeland, Pa., $2.09 per net ton, subject to ExParte 175-B increase.

Docket TLM-2794 (Carrier)—Proposed to establish on stone, crushed (will not include agricultural or ground limestone,

The **$64 ANSWER**

to **BULK MATERIAL SCALING PROBLEMS**



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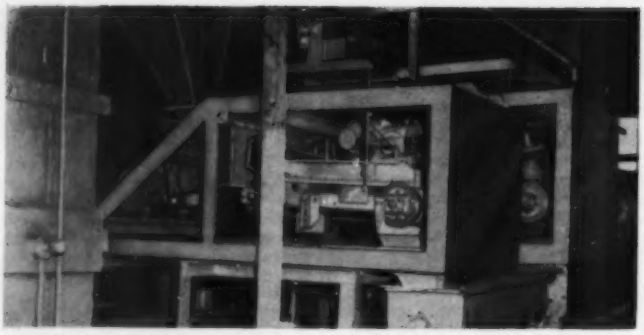

Two Syntron Gravimetrics weigh feeding ingredients for blending operation.

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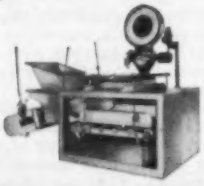

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unburned; fluxing stone or firestone; or stone, coated with oil, tar or asphaltum) carload, minimum weight 90 percent of marked capacity of car, from Annville, Pa., to Tremley, N.J., $1.92 per net ton, subject to ExParte 175-B increase, to be issued to meet water competition and expire with February 28, 1954.

Docket E-41-1756 (S)—Proposed to establish on stone, crushed; and limestone, broken, crushed or ground, straight or mixed, carload. Minimum weight 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, the actual weight will apply. Representative rates shown from Tate, Lithonia, and Whitestone, Ga., to Minnesota points:

	Crushed Stone		Crushed Limestone	
	Lithonia	Tate	White-stone	Tate	White-stone
Blue Earth	806	836	783
St. James	826	856	803
Pipestone	846	876	823
Windom	866	896	843

(Rates in cents per ton of 2000 lb.). Subject to X-175-B.

Docket X-E-41-1766 (S)—Proposed to establish on crushed stone, carload in open-top cars not protected by tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity is less than 90 percent of the marked capacity, the actual weight will apply, but in no case shall the minimum weight be less than 20 tons, from Ferguson, Ia., to Omaha, Nebr., 166.88 cents per net ton of 2000 lb., not subject to X-1751B.

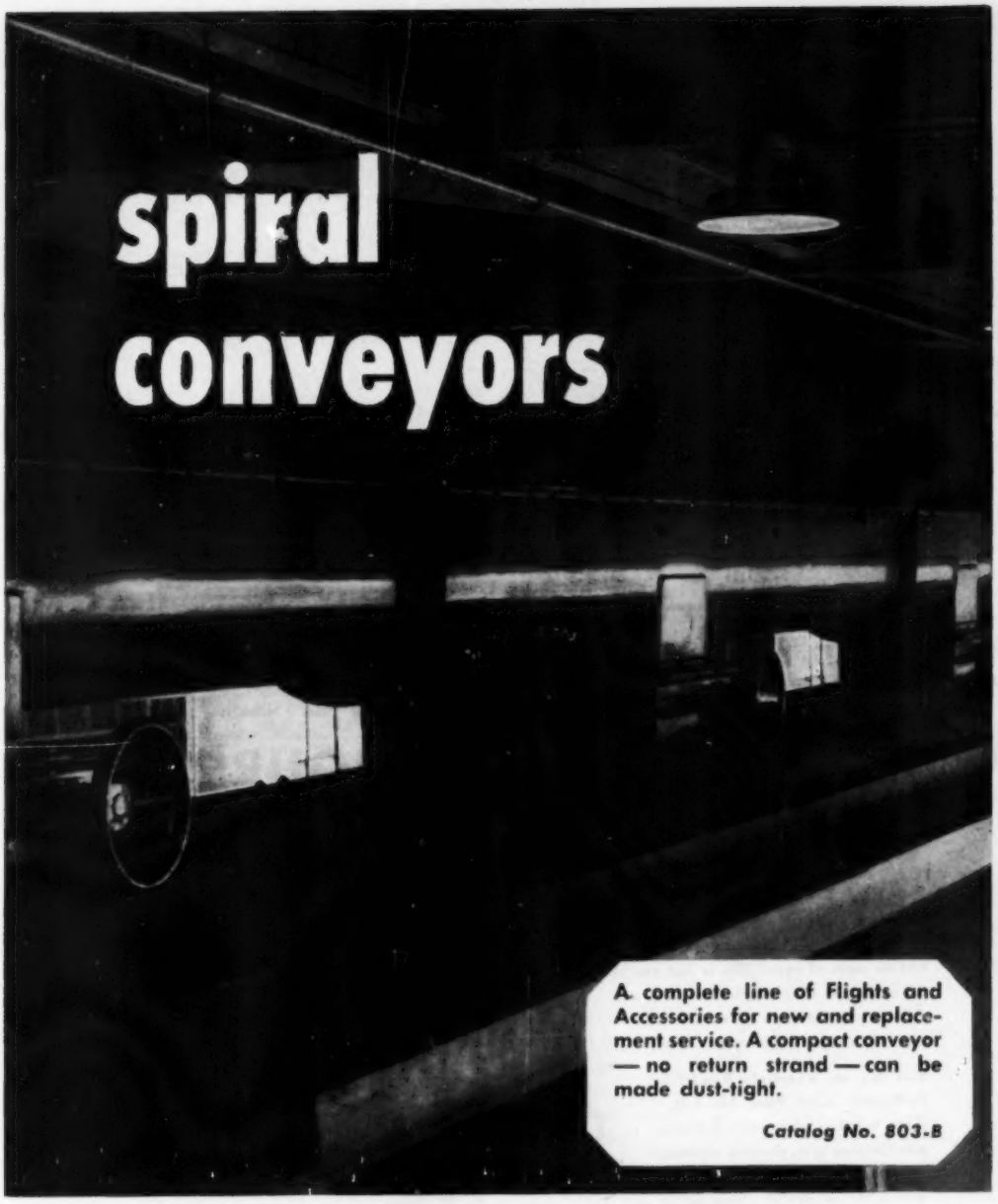
Janesville Open House

(*From page* 115.)

they are excellent examples of a growing trend among block manufacturers. The warehouse carries an extensive line of building materials other than lumber or lumber products. Building materials related to the use of concrete and block, as well as mechanical tools, are on sale in the store. Here customers can buy at one place everything they need for building a house of any other structure. Among the more than 150 items stocked are steel doors, windows and lintels, reinforcing steel, cement, plaster, Waylite, perlite, vermiculite, lime, gypsum lath, cement colors, concrete nails, metal lath, rubber base coating, plasters, residential door hardware, etc.

J. K. Jensen, president, and his brother J. R. Jensen, vice-president, were co-founders of the company. G. F. Ehrlinger is secretary. Earl C. Jensen, treasurer, is in charge of the operation of one of the two gravel plants. Two others of the second generation are also active in this business, Ray Jensen operating the other gravel plant and Oscar Jensen the block plant.

An increase in net sales — from $9,234,970 in 1951 to $10,051,057 in 1952 — but a decline in net profit appeared on the balance sheet of the Peerless Cement Corporation for 1952. Whereas net profit amounted to $952,850 in 1951, the figure dropped to $939,841.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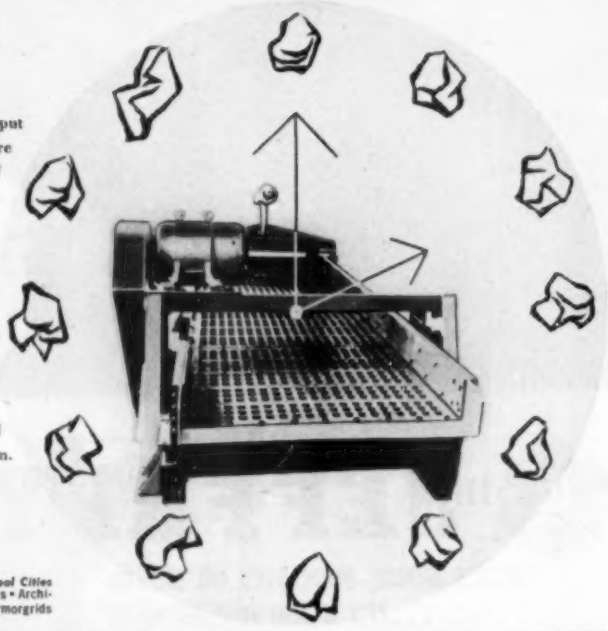

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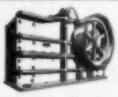
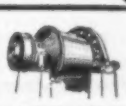

Jaw Crushers

Gyratory Crushers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Simplicity maintains big stocks of aggregate wire screens, already woven, in an adequate range of openings and a choice of wire gauges . . . edges formed promptly for any type vibrator. Excellent service.

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Typical of Galion heavy duty rock bodies is this 7 cu. yd. with full size cab protector, reinforced with structural steel channel and angle.

● If you need dump truck equipment that is built to take a beating day after day without downtime . . . that will work longer with less maintenance and operating cost . . . that you can be proud to own and operate . . . you should become a Galion user —right away!

There's a standard Galion model to meet virtually every need of every quarry contractor. But, if you need extra heavy duty units for jobs that are tougher than tough, Galion will be glad to design and build them to your specifications. Just see your nearest Galion distributor—today!

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Gives greater yardage at lower cost.
The Tooth with the POSITIVE
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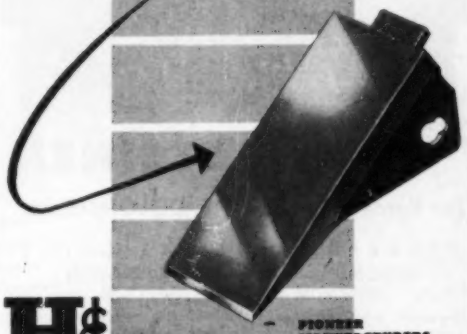

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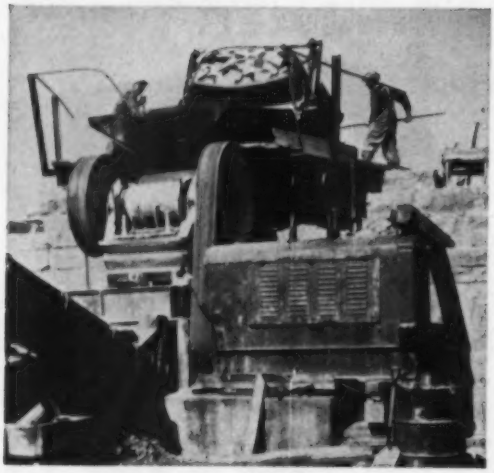

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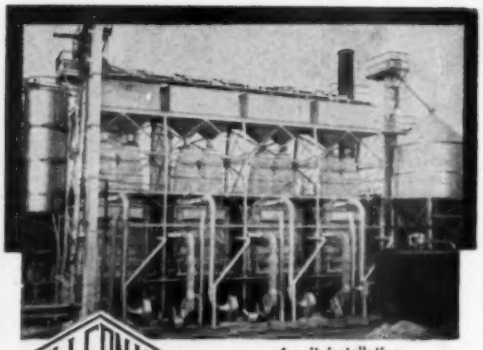
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



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There's a CHAMPION item for practically every welding need. For longer wear and better function choose the line preferred by veteran welders.

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Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.

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Here is the ANSWER to your MAGNETIC SEPARATOR JOBS!

HOMER "POWER-PLUS" MAGNETIC SEPARATORS

PERMANENT non-electric—*Unaffected by HEAT, COLD or MOISTURE*

CAN BE USED INSIDE OR OUTSIDE PLANT

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HOMER MAGNETIC PULLEYS AND PULLEY UNITS—
Available in standard diameters from 12" to 30"; belt widths 4" to 60". Special sizes upon order.

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Available in standard diameters from 12" to 30"; face widths 4" to 60". Can be furnished with or without enclosure.

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Available in standard widths from 4" to 26"; lengths and number of poles as required. Special fabrications to your specifications.

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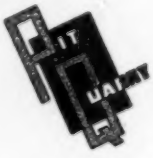
Write for descriptive bulletins

THE HOMER MANUFACTURING CO. INC., DEPT. I-52, LIMA, OHIO

Advertise your wants and surplus equipment in



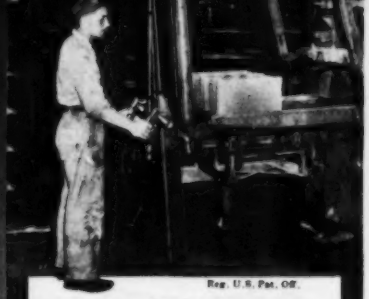
THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

EXTRA BLOCKS!

HOURLY-DAILY THROUGH MAXIMUM OPERATOR EASE and COMFORT

Gone are the days when it took a dreamy weight-lifter to operate a concrete block machine with anything approaching efficiency. Now, with Stearns plain pallet machines, any man can pneumatically stack up blocks for hours on end, returning the empty pallets magnetically to the machine, *with no more effort than it takes to close the hand and push a button!* And, from that point on, the block-making cycle is repeated, *without the operator's lifting a finger!*



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PNEUMATIC OFFBEARER—No stooping or stretching—No more "broken backs!" Offbearer load of two full plain pallets moves up or down independent of controls which are adjusted to the proper height for operator's maximum comfort. Guided from the machine to the available deck of the rack, the load is there released. With the same motion, the offbearer magnetically lifts two empty pallets from the deck below and swings them over the pallet conveyor, where they are dropped and automatically conveyed to the pallet magazine.

AGITATOR FEED DRAWER

The exclusive Feed Drawer Agitator for all Stearns machines consists of rapidly rotating shafts, each carrying a multiple of spikes. The result is a thoroughly broken up mass which rapidly, uniformly, automatically fills the mold box.

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POWER PALLET HANDLING—The Pallet Return Conveyor, a self-contained unit, *eliminates all handling of pallets by hand.* As empty pallets are conveyed along the side of the machine, they are mechanically brushed, flooded with oil and wiped in an almost fool-proof way and *out in the open.* Pallet Conveyor can be easily moved away from the machine for cleaning or servicing.

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OWNERSHIP— THE KEY TO SUCCESS!

STEARNS

STEARNS 15 • STEARNS 50
ZIPPERS • JOLTCRETES • MIXERS
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MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN

Virginia Cement Block Company

GETS "A MUCH BETTER BLOCK" with DURAPLASTIC*

I. E. SEPPI of the Virginia Cement Block Company, Virginia, Minn., says, "We find Atlas Duraplastic Cement reduces breakage at the machine to a minimum and produces a much better block in appearance and strength." Left, at the machine, Wilho Seppi is making Duraplastic block.

With Duraplastic you can make a more cohesive, rubbery mix that holds together better, feeds easily through machines. What's more, users report increased resistance to passage of water through finished products. No wonder Duraplastic Cement is widely preferred for concrete block, brick, pipe, drain tile and silo staves!

And gets orders for jobs like this:

"Thrifty" says:
When you can give your customers a better block... and have fewer culls and throwbacks at the same time, it really pays to insist on Duraplastic. That's why Virginia Cement Block Company uses it exclusively.
"Nifty" says:
Clean, true edges and corners of Duraplastic-made blocks helped Virginia Cement Block Company land the order for this big warehouse in Hibbing, Minn.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS® **DURAPLASTIC**
AIR-ENTRAINING PORTLAND CEMENT

CM-D-152

Makes Superior Concrete Products at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—September to June*

The CONCRETE MANUFACTURER

June 1953

Confirmation

THE EDITORS of the CONCRETE MANUFACTURER have for some time felt a good deal of concern regarding the accuracy of this publication's periodic attempts to estimate the annual output of concrete masonry units. The statistics published in January each year have been based upon the results of our own direct-mail production surveys, applied to figures contained in the 1947 Census of Manufactures as a reference plane. Each year we have increased our mailings in an effort to compensate in some measure for the longer interval, and we have exerted all our faculties of judgment and restraint to make the final compilations accurately represent the performance of the industry as a whole.

The methods we have used should prove to be sound enough under ordinary conditions, but the conditions which have prevailed throughout the concrete masonry industry since 1947, when the last complete production studies were made, have been anything but ordinary. Throughout much of the period new productive capacity was created at an unprecedented rate, while at the same time there were innumerable ownership changes, consolidations, and out-and-out failures among the post-war this-looks-like-a-good-thing fraternity. There was never any question but that capacity increases were greatly in excess of losses, but in all the turmoil there seemed little justification for hoping that production data obtained from relatively small segments of the industry could be projected to obtain reliable figures for the entire industry.

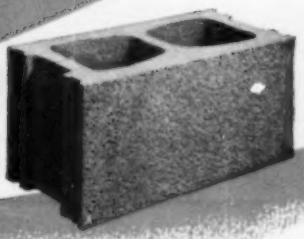
We have just received an advance report of the 1951 Survey of Manufactures conducted by the Bureau of Census, and the figures shown for the concrete masonry industry indicate a surprisingly close correlation with our own estimates published in January, 1952. The report gives the value of block and brick shipped in 1951 as $332,379,000. Based on the generally accepted selling price of 20 cents per 8-in. equivalent, the Bureau of Census figure corresponds to about 1,662,000,000 masonry units. This publication estimated from its direct-mail survey of about 14 percent of industry capacity that total production in 1951 amounted to approximately 1,650,000,000 units. The spread between our figures, published 17 months ago, and the Bureau of Census figure released in April of this year, is less than one percent.

Much as we would like to attribute this phenomenal agreement to our own good management, we are well aware that so close a check between two independently-conducted sampling surveys can only be regarded as a fluke. Under normal conditions agreement within ten percent would be considered entirely acceptable. In any case, we are grateful for the reassurance found in the Bureau of Census figures, and we hope that the confirmation will encourage more block producers to supply the type of information on which our future estimates will be based.

This year the Bureau of Census will make its quinquennial Census of Manufactures, which will include a complete roundup of statistics on production, employment, plant population, payrolls, man-hours and similar information. When these figures are published, sometime in 1954, they will provide a new plane of reference for our own survey undertakings in the years ahead. We are confident that they will also confirm our never-challenged claim that the products of the concrete masonry industry now compose the lion's share (over 70 percent) of the total volume of masonry wall now being constructed.

William M. Avery

Only a Besser Vibrapac is *Fully CAM OPERATED!*



Illustrating the cam and roller principle of the Besser Vibrapac. Only a few moving parts. You get high production with these slow, revolving cams and long machine life.

Many concrete block plants are now running on a 24-hour a day schedule of uninterrupted production, day-in and day-out. This is made possible by the exclusive Besser cam and roller principle of power application which assures smooth, continuous operation.

The rugged steel cams and heavy duty alloy steel rollers and large diameter shafts provide an exceptionally long service life and dependability. The cams are machined from a single piece of steel having a thickness of 2". The entire wearing surface is heat treated and hardened.

Let's examine a Vibrapac. You'll find there are no pistons . . . no valves . . . no leaking liquid . . . no interlocked operations. One operation does not trip the next. Each one is perfectly timed. There are no lost motions between the various operations of feeding . . . vibration . . . striking off surplus concrete. . . stripping finished block . . . delivering finished block to front of machine . . . and placing new pallet under mold. This accounts for the unusually high production of uniformly high quality block.

Only a Besser Vibrapac is fully cam operated. The rugged simplicity of the Besser Cam and Roller principle of operation is one of the greatest contributing factors to the universal acceptance of the Automatic Vibrapac.

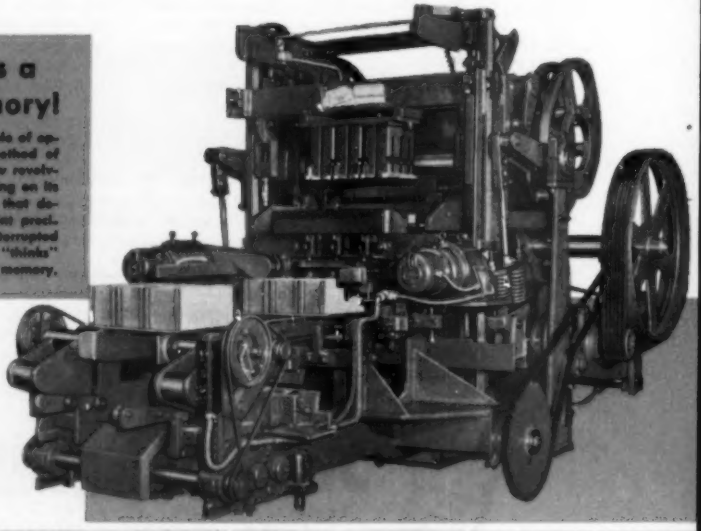
BESSER MANUFACTURING COMPANY

Complete Equipment for Concrete Products Plants

Alpena, Michigan, U.S.A.

A CAM has a Perfect Memory!

The cam and roller principle of operation is the simplest method of power application. A slow revolving cam, with a roller riding on its surface, activates an arm that delivers power with pin point precision and with steady, uninterrupted regularity. A cam virtually "thinks" for you . . . has a perfect memory.



Front Pallet Feed Vibrapac

— the modern, fully automatic concrete block machine. Produces three 8" x 8" x 16" modular units at a time on one plain pallet. Other sizes produced in equivalent multiples on the same set of plain pallets. No machine operator is required. Hand labor is reduced to pushing a switch button and guiding a power offbearing hoist. One man removes finished block, and, with no lost motion, returns empty pallets to the Vibrapac.

BESSER

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

A 7280-1PBC

news of the concrete industries

Quadruple-Feature Dinner Fetes Honored Employees Of West Coast Pipe Firm

"The concrete-pipe industry is developing new methods and a vastly improved product. Whether a company is in existence 10 or 20 years from now is more likely to be determined by what happens in the laboratory and research department."

So declared W. A. Johnson, chairman of the board of the American Pipe & Construction Company, Los Angeles, as he opened the recent Service Pin Dinners staged by his company. American is reportedly one of the country's largest producers of concrete-pipe.

The dinners were held simultaneously in Los Angeles, San Diego, Oakland, and Portland, Ore., and were tied together by telephone public address relay. Co-ordination by wire made it possible for the speakers at each of the far-flung locations to be heard simultaneously in each of the four cities where the dinners were in progress.

Service pins were awarded to 144 employees at the four meetings, bringing to a total of nearly 500 the men and women who have worked for the company for five years or longer.

The Los Angeles meeting was held at the Clock Country Club, where President H. H. Jenkins addressed the diners after Mr. Johnson's opening talk. Fred Jenkins, vice-president in charge of production, spoke from San Diego; D. A. Dunkle, vice-president in charge of personnel, was the key speaker from Oakland; and in Portland the speakers were Allen Grubb, in charge of the Northwest Division, and Robert V. Edwards, vice-president.

A new plant went into production in May, 1953, at Phoenix, Ariz., the new facilities being devoted almost entirely to producing prestressed pipe. Cliff Davis is superintendent at Phoenix.

The company's Texas affiliate, Gifford-Hill-American, Inc., has built a new centrifugal pipe plant at Victoria, Tex., to supply the southern part of the state.

Two subsidiaries of American Pipe & Construction—Pipe Linings, Inc., and Amercoat Corp.—likewise are more active than usual this year. The former contracts to clean and line existing pipelines with concrete, while Amercoat sells and services corrosion-proof coatings.

H. H. Jenkins also recently became president of Amercoat, to succeed the late Alan E. Turner.

Joint Group Insurance Plan For N.S.G.A. and N.R.M.C.A.

A joint group insurance plan for the National Sand and Gravel Association and the National Ready Mixed Concrete Association has been legally established and is now in operation, according to word from Vincent P. Ahearn, executive secretary of the two associations.

Under the plan as it is now set up, broader eligibility for Class I benefits—$5,000 life insurance and $5,000 accidental death and dismemberment insurance instead of $2,000 coverage in each case—are in effect for "active officers, partners, proprietors, and *executive assistants.*" The last-named group will be sufficiently broad to permit extension of $5,000 benefits to such supervisory personnel as superintendents, department heads, and chief engineers.

Benefits accruing from the operation of the joint plan will be made available to the participating employers. The only charge against the plan will be the underwriting charges of the John Hancock Mutual Life Insurance Company and out-of-pocket administrative expenses incurred by the two associations.

Coming Events

June 29-July 3, 1953 — Atlantic City. 51st annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

September 10-12, 1953—Chicago. Third annual Short Course School of Instruction, American Concrete Pipe Association. Sherman Hotel.

September 28-30, 1953—Colorado Springs. Directors' meeting, National Ready Mixed Concrete Association and National Sand and Gravel Association. The Broadmoor.

Material Service Corp. Sponsors Concrete Course For 300 Earnest Scholars

It was back to school recently for Material Service Corporation employees, who attended the first course on concrete sponsored by a Chicago area company.

Held by special arrangement at the Illinois Institute of Technology, the course was designed to give the company's employees a fundamental understanding of the production and placing of quality concrete.

Irving Crown, executive vice-president, who arranged with Dr. J. T. Rettaliata, president of I.I.T., for the special course, said, "We felt that there was no better way to improve the service to our customers than to have all of our employees, if possible, become experts in all matters pertaining to the use, quality, and placing properties of concrete. This special course was designed to accomplish this in a minimum of time."

The two-hour sessions were held one evening a week for seven weeks. Although employees were under no obligation to attend, over 300 completed the course. All classifications of employees from ready-mix truck drivers to salesmen and executives were represented.

Classes under the direction of Benjamin A. Wasil, assistant professor of civil engineering at I.I.T., were taught by experts from the cement and construction industries. Movies, laboratory demonstrations, and panel discussions were featured.

Topics covered included the following: a basic discussion of the various types of cement and aggregate; the company's techniques in proportioning; admixtures; the proper forming, placing, finishing, and curing of concrete; the prospecting, processing, and distribution of sand, gravel, and stone by Material Service; and practices contributing to faulty concrete during the preparation and placing.

The Florida Portland Cement Division, General Portland Cement Company, has announced the resignation of Neilson Jones as the firm's Miami district manager.

Look how D-40 helps produce better, stronger Concrete Blocks

Sharper corners and edges

Increased plasticity improves handling with less breakage

Better appearance—smoother texture, whiter color

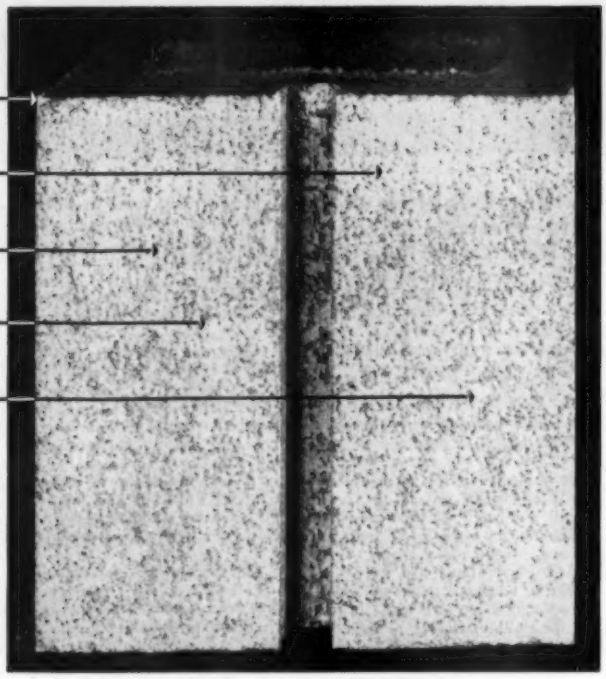
Greater strength due to decrease in water content

Closer bonding—saves on painting and waterproofing

D-40 reduces abrasive wear on mixing and molding equipment

D-40 saves time—mixes pour into molds faster—"break" cleaner

Economical D-40 costs you a fraction of a cent per block



(Block made with D-40. Note the fine texture, color and appearance—the sharp edges and corners)

You will be amazed at the outstanding results obtained by adding one to two ounces of dry, granular D-40 per bag of cement at the mixer. D-40 is a ready-to-use additive supplied in economical 85# bags by Oronite, the world's largest producer of synthetic detergent raw materials.

Let us show you how we have helped other concrete products manufacturers make superior products and at the same time reduce their operating costs. Our experience is at your disposal.

ORONITE CHEMICAL COMPANY

THE NAME TO WATCH IN CHEMICALS

Ready-mixed concrete producers have found D-40 improves their product

For complete information, samples and technical help write or call the Oronite office nearest you.

ORONITE CHEMICAL COMPANY

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30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK
STANDARD OIL BLDG., LOS ANGELES 15, CALIFORNIA
600 S. MICHIGAN AVENUE, CHICAGO 5, ILLINOIS
MERCANTILE SECURITIES BUILDING, DALLAS 1, TEXAS

Pacific Northwest's N.C.M.A. Holds Profitable 3-Day Meeting

● The Pacific Northwest Regional N.C.M.A. group tops off a busy day's conference with a banquet attended by representatives of 17 major block manufacturers from Oregon, Washington, Idaho, and British Columbia. At the head table were Mr. and Mrs. George Duecy, Everett, Wash.; Mayor and Mrs. Fred L. Peterson of Portland; S. Carl Smithwick of Portland (chairman); William P. Markert, director of promotion, N.C.M.A., Chicago; and Verne Frese and Eric Hayford, Layrite Concrete Products Co., Seattle and Spokane.

One of the most successful meetings of block manufacturers ever held in the Pacific Northwest convened at the Multnomah Hotel in Portland on April 25, with nearly all major producers in that region represented. The meeting was sponsored by the Pacific Northwest members of the National Concrete Masonry Association.

The meeting took on the nature of a block manufacturers' clinic, with representatives of the various firms participating in panel discussions covering the three major phases of the block industry. The following subjects were covered:

Problems of Block Production and Their Solution. Eric J. Hayford, Layrite Concrete Products, Spokane, presided, with John Hutsell, Associated Sand and Gravel Company, of Everett, Wash., and Wallace Beardsley, Production Manager of Layrite Concrete Products, Seattle, members of the panel.

Sales and Promotion. The discussion was led by George P. Duecy, Associated Sand and Gravel Company of Everett. Robert W. Condon, Graystone Concrete Products, of Seattle; Gayle R. Dutton, Layrite Concrete Products, Spokane; and Paul L. Nutt, Smithwick Concrete Products, Portland, participated.

Engineering and Research. Panel discussion was in charge of Robert Lochow, engineer, Portland Cement Association, Seattle district office. The following panel members took part: James Holroyd, Holroyd Company, Tacoma, Ellis Cummins, Yakima Cement Products, Yakima, Wash.; and Verne Frese, Layrite Concrete Products, Seattle.

One of the highlights of the meeting was an address by Professor Albert H. Schrieber, College of Business Administration, University of Washington at Seattle, in which he discussed *Profit Administration in Competitive Markets.* His charts and convincing data demonstrated the perils of price cutting in the block industry.

William P. Markert, director of promotion, National Concrete Masonry Association, Chicago, delivered the principal luncheon address, which described the dynamic program being proposed by N.C.M.A. in the field of promotion. Unanimous endorsement of the more than 60 representatives of the block industry present was given this program.

Chairman of the meeting was S. Carl Smithwick, a director of N.C.M.A. and president of Smithwick Concrete products of Portland. Harold Lutes, president, Layrite Concrete Products Company, Spokane, was program chairman.

A planning committee to arrange for future meetings appointed by the chairman includes the following: Harold Lutes; Ellis Cummins; Fred Kettenring, president, Graystone Concrete Products Company, Seattle; Verne Frese; George Duecy; M. R. Gibbons, Builders Supply Co., Medford, Ore.; Frank Spangler, president, Empire Building Materials Co., Portland; and Ray McCleery, McCleery and Weston, Vancouver, B. C.

● Two of a series of eight safety posters, designed to remind industrial truck operators of safe driving and operating practices. They were produced by The Baker-Raulang Company, Cleveland, Ohio. Printed in color on 14- by 22-in. sheets, the posters are done in a bold cartoon style which makes them easy to read at a distance and while moving. The tag-line, "Be Smart—Be Safe", appears on each poster.

April Construction Activity Up 8% to $2,600,000,000—Jan.-April Totals Rise

Expenditures for new construction increased by 8 percent during April to $2,600,000,000, and were 5 percent above April, 1952, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division of the U. S. Department of Commerce. Private outlays of $1,801,000,000 in April represented an increase of 5 percent from March, mainly because of the rise in residential and public utility construction. Seasonal gains in roadbuilding during April, and increased public spending for industrial plants, including atomic energy facilities, accounted for most of the 14-percent rise to an $837,000,000 total for new public construction.

The value of new work done on private non-farm residential building amounted to $887,000,000 during April, about 6 percent above the March figure and about 4 percent more than in April, 1952. Although private industrial building in April was slightly below the March figure, with indications of some further tapering of expenditures on this work, outlays remained close to last year's record level.

April expenditures for commercial construction and most other major types of private nonresidential building held about even with March, and except for hospital construction, were considerably above outlays during April, 1952. Private expenditures for new work on public utilities, especially on electric power and gas facilities, continued the uptrend that began in March.

Military and naval expenditures for new construction showed a less than seasonal rise during April, while public outlays for hospitals and schools remained at the March level. Among other types of public nonresidential building, monthly expenditures thus far in 1953 have been running at double last year's rate for construction on penal and corrective institutions.

The $185,000,000 spent for new work on highways during April, 1953, chiefly reflected outlays by state and local governments. For public construction as a whole, state and local funds (principally for highways, schools, hospitals, and sewer and water facilities) accounted for about 55 percent of total public expenditures for new construction during 1952 and thus far in 1953, as compared with 62 percent in 1951 and about 70 percent in 1949 and 1950.

During the first four months of 1953 new construction with a total value of more than $9,600,000,000 was put in place, compared with $9,100,000,000 in the corresponding period of 1952—an increase of 6 percent.

One of the earliest uses of reinforced concrete was in flower pots and garden tubs. Joseph Monier in France in 1867 patented a method of making flower pots of concrete reinforced with iron mesh.

Regional Groups Represented At First Meeting in Chicago

REPRESENTATIVES of local, state, and regional associations existing within the concrete masonry industry met at Chicago's Edgewater Hotel on April 13 and 14 for the first time. Phil Paolella, chairman of the National Concrete Masonry Association's Regional Association Committee, presided. Present were representatives of the following associations:

Chicago Metropolitan Block Producers—H. Buchholz; Concrete Block Association of Allegheny County, Pa.—R. W. Baldridge and W. Rennenkamp; Concrete Masonry Association of Omaha and Nebraska Concrete Masonry Association—E. W. Peterson; Concrete Products Association of Michigan—H. J. Vincent and C. A. Sirrine; Eastern Concrete Products Association—Ira Honaman; Mo-Kan Concrete Products Association — Tip Brown; National Concrete Products Association of Canada—W. C. Coupland and G. Fraser; New York Concrete Masonry Association—G. Dinaburg and J. Daly; Southeastern Concrete Masonry Association — G. Katterjohn; Virginia Concrete Masonry Association— J. W. Mitchell; Wisconsin Concrete Products Association—R. Minette, F. Yahr, and A. W. Devos; North Carolina Concrete Masonry Association—H. J. Stockard and T. F. Bradshaw; Minnesota Concrete Products Association—L. A. Borgert and W. Brull.

The following members of the Regional Association Committee were also present: Fred Reinhold, M. E. Rinker, Glenn Barnes, and Harold Spaight. Chicago N.C.M.A. staff members attending included E. W. Dienhart, executive secretary; R. E. Copeland, director of engineering; W. P. Markert, director of promotion; and Evelyn Bouet, assistant secretary.

Topics discussed at the two-day sessions included the following: methods of promoting and publicizing model home demonstrations; techniques of conducting an architectural competition such as that sponsored by the Michigan Society of Architects in conjunction with the Concrete Products Association of Michigan (see page 160); the fire insurance rates available for members of an association; methods of building and maintaining a membership that will actively support the program of the association; benefits of co-operative advertising; and ways of exhibiting in home and garden shows, state state and country fairs, and building exhibitions. A helpful exchange of ideas among the various representatives was the result of statements describing programs and techniques.

Since a desire for future meetings of this type was expressed, the date of the next such gathering was set for March, 1954.

Below: C. A. Sirrine, Herb Vincent, and T. F. Bradshaw.

Below, right: H. Buchholz, R. Baldridge, and William Rennekamp.

American Block Machinery Purchased By Korean Firm

The first concrete block plant in Korea will be in operation this summer, following shipment of an order for concrete block machines by the Columbia Machine works, Vancouver, Wash., to the Central Mill & Supply company of Pusan.

The block plant, intended to aid in the rehabilitation of the war-torn peninsula, was purchased by a Korean mission which spent more than three months in this country.

Fred Neth, president of Columbia, said his firm expects to ship additional machines for plants in Seoul and other points in Korea after the plant at Pusan has been completed. The deal will be one of the largest in Columbia's history.

Representing Central Mill & Supply company, a private corporation selected by the Korean government to handle the purchase of block-making equipment and other machinery in this country, were Cho Sung Chul, managing director of the company; Soon Ju Chey, San Francisco, technical and business adviser to the company; and Edward W. Pai, Honolulu importer.

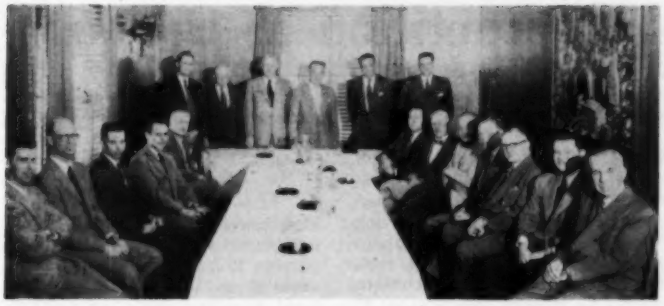
● Two representatives of Central Mill & Supply Company, Korea's largest construction firm, sign an order for Columbia Machine Works concrete block makers which will be the first such machines in Korea. Shown in the Vancouver home office of Columbia are (left to right) Cho Sung Chul, managing director of the Korean firm; Soon Ju Chey, his business and technical adviser; Paul Klemens, assistant sales and export manager for Columbia; and Fred Neth, Columbia president.

Central Mill & Supply is the largest construction company in Korea. It is now engaged in rebuilding the capitol and the home of President Syngman Rhee in Seoul; it has also erected many schools, factories, and other buildings in Korea.

The purchase was planned by the Korean government in co-operation with the United Nations and the Civil Assistance Corps. Shipment of the first machines to Pusan will be made at once, according to Mr. Neth. Cement and other requirements for concrete block aggregate are produced locally in Korea; so construction materials will start to flow as soon as the machines are set in place and connected to power.

There is a sign atop Shasta Dam in northern California which reads: "This is government property. Do not remove." The dam weighs about 12,000,000 tons and contains 6,541,000 cu. yd. of concrete.

The Stearns Manufacturing Company, Inc., Adrian, Mich., has announced the appointment of James J. Collins, of Twin Lakes, Wis., as district manager for State of Illinois and adjacent territory.



● E.S.I. officers: George Bickel (Featherlite Corp., Dallas, Tex.), secretary; W. W. Allen (Hydraulic Press-Brick Co., St. Louis, Mo.), first vice-president; A. R. Waters (The Carter-Waters Corporation, Kansas City, Mo.), treasurer; S. Carl Smithwick (Smithwick Concrete Products, Portland, Oreg.), president; Alex McVoy (Texas Industries, Inc., Dallas, Tex.), second vice-president; and Frank G. Erskine, Warner Building, Washington, D.C., managing director.

Expanded Shale Institute To Conduct Important Tests

The recently organized Expanded Shale Institute at a three-day meeting in Kansas City, Mo., on April 13, 14, and 15 endorsed a number of progressive measures initiated at the organizational meeting in St. Louis last June and at the second meeting in Dallas in December of last year. The Kansas City meeting brought together representatives from 17 major producing companies of expanded shale aggregate over the country. Very appropriately, the group met in April at the birthplace of the industry in Kansas City, Mo. Personnel of the Carter-Waters Corporation, Kansas City, Mo., and Buildex, Inc., Ottawa, Kans., were hosts.

Energetic committee work brought endorsement to a number of important activities vital to the progress of the organization. Outstanding among the accomplishments is a provision for laboratory study to correlate expanded shale aggregates from the 17 producing plants. Tests will cover shrinkage, sonic modulus, and flexural and compressive strengths. Efforts will be made to establish a standard procedure for molding specimens of expanded shale concrete for laboratory research, eliminating as many variables as possible, so that uniform results can be obtained in any laboratory in the country.

The Expanded Shale Institute has become a member of the American Concrete Institute and of Committee C-9 for Concrete and Concrete Aggregate of the American Society for Testing Materials. Funds have been allocated for concrete masonry fire tests and for laboratory study of expanded shale concrete which has been exposed to sea water for the last 34 years. Preliminary studies indicate that valuable information will become available to the construction industry.

Multiplex Machinery Company Purchased by Multipack, Inc.

Multipack, Incorporated, has announced the purchase of the Multiplex Machinery Company, Elmore, Ohio, which will become a subsidiary division of the new corporation. Established in 1908, Multiplex Machinery Company is one of the oldest block machine manufacturers and a leader in the field. It will continue to manufacture its standard lines of fully automatic concrete block machines, mixers, off-bearers, skip hoists and elevators. In addition, the new management reports that current production and sales facilities are being expanded to meet increasing demands.

Officers of the new corporation are R. A. Parker, chairman; Joseph J. Parker, president; John S. Parker, vice-president and sales manager; Lester C. Young, secretary; J. S. Parker, treasurer; A. E. Stitt, general manager; and Nelson C. Johnson, plant manager.

Lawrence J. Holzman, president of the Multiplex Sales Corporation, Elmore, Ohio, and the Pacific Concrete Products Corporation, died recently at the age of 44 years. He was also president of Fabric Specialties, Inc., of Cleveland, Ohio, and a director of the Western Metals Abrasive Company, Chicago.

Portland cement was first made in the United States at Coplay, Pa., in 1871—just 47 years after the invention of the product in England.

Two Argentine Architects Win Home Design Contest Over 854 Other Entries

Two Argentine architects on temporary teaching assignments at North Carolina State College took top national honors and $5,000 in prize money in the Carrier Weathermaker Home Competition, it was announced by Edgar I. Williams, chairman of a panel of judges. Purpose of the competition was "to stimulate the design of year-round air conditioned homes in the moderate price bracket."

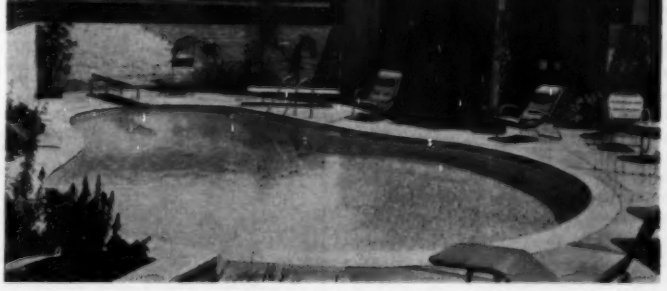
In the opinion of the judges, the plan for a flat-roofed, one-story, five-room house submitted by Professors Eduardo Fernando Catalano and Horacio Caminos of the staff of the School of Design of the North Carolina College was the best of 855 entries submitted by architects, architectural draftsmen, and students from all over the country.

The competition was the first such national event ever held in which year-round air conditioning was a requirement. The competition was sponsored by Carrier Corporation, pioneer in air conditioning, which offered $27,800 in cash awards in an effort to interest architects and builders in homes designed especially to meet the requirements of the recognized trend toward year-round air conditioning of dwellings.

Area grand prize winners for homes with floorspace of 1,000 sq. ft. and under each received $2,000. There were 25 lesser prizes awarded for various types of modern homes, all featuring year-round air conditioning. Awards were made on a sectional basis in the two classes for homes of flat and pitched roof design.

Mr. Williams, chairman of the panel of judges, stated that the interest evidenced in this contest proves that "general acecptance of residential air conditioning is pointing toward new designs and new adventures in home living. . . ."

Cloud Wampler, president of Carrier Corporation, predicts a great boom in the residential air conditioning business. "More than 60 percent of the homes to be built in this country within the next six years will be completely air conditioned," he said.



● This attractive swimming pool incorporates cast-stone coping produced especially for this purpose by Harold Allen of Los Angeles, Calif. The units have a travertine texture for protection against skidding, and are produced in a wide range of color including blue, green, black, salmon, coral, and buff. Compressive strengths are said to run around 6,000 p.s.i. The pool shown was built by Clifford Hall of North Hollywood, Calif.

Architectural Competition as a Tool In Merchandising Concrete Masonry

By C. A. SIRRINE
Executive Secretary
Concrete Products Association of Michigan

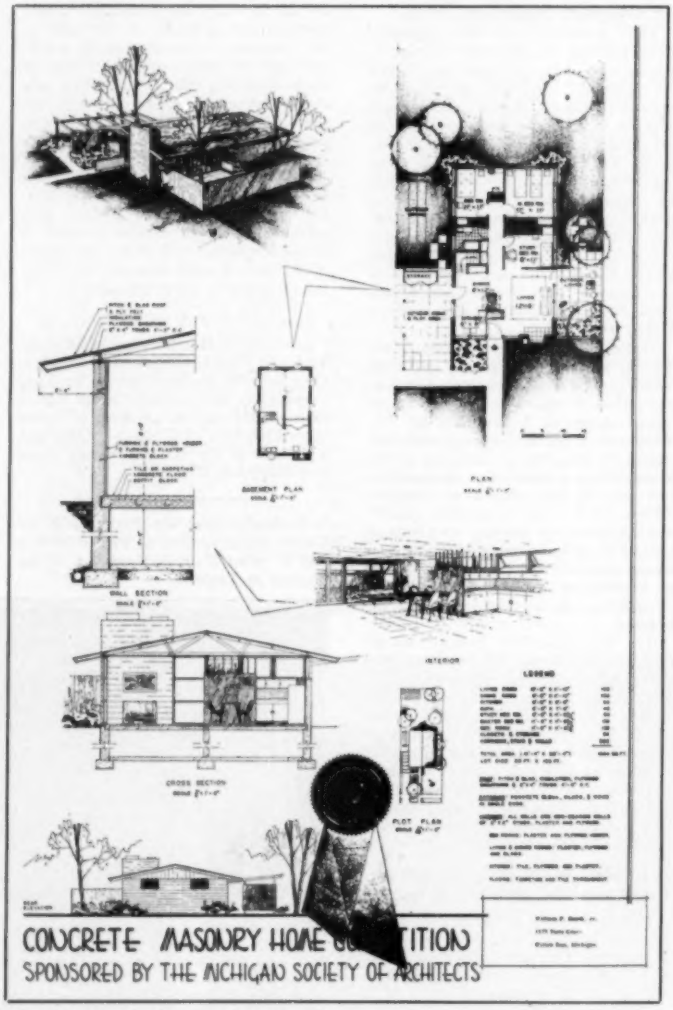
• Mr. Sirrine's original paper entitled "A Pattern for Promotion" was presented at the annual convention of the National Concrete Masonry Association in Cleveland last January. We have requested and obtained his permission to print this condensation because we feel that the message it conveys deserves the widest possible circulation.
— The Editors

THE Concrete Products Association of Michigan has for a long time held a firm belief in the value of long-range promotion by education, with particular emphasis on the thought that the more familiar students of architecture and young draftsmen could become with concrete masonry and its proper use, the more likely it would be that these same individuals would some day turn naturally to concrete masonry as a favored building material.

When the Home Planning Center of one of the nation's largest department stores, The J. L. Hudson Company of Detroit, inquired about the availability of a concrete masonry home plan exhibit, the association promptly agreed to initiate an architectural competition to provide the requested material. Hudson, in turn, agreed that the result of the competition would be given a full-scale treatment of display in their Home Planning Center, and the wide coverage of newspaper and radio publicity which is standard practice for retail establishments of that size.

An architectural competition must have two things. There is a need for a program which will make clearly known to each contestant the rules under which he may enter and compete, and for an unmistakable description of the design required to be produced. Secondly, there must be cash prizes of sufficient number and amount to make entry into the competition an attractive matter. This is no place to economize. There is a third element which, in the writer's opinion, should also be regarded as a "must." It is the need for sponsorship of the competition by an officially recognized architectural group such as a local chapter of the American Institute of Architects (or some other organization recognized by that body) having local jurisdiction. In Michigan sponsorship was readily obtained from the Michigan Society of Architects, an A.I.A. affiliate. Sponsorship of this kind is perhaps not mandatory, but less than desirable results are likely to come from failure to obtain it. From the standpoint of industry welfare, if for no other reason, the value of having the organized architects' support solidly and publicly behind such an effort makes sponsorship highly desirable.

Rules for a sponsored competition are, for the most part, standardized by existing A.I.A. procedures. In



First prize of $1,000 was awarded for this striking design by William P. Smith Jr. of Willow Run, Mich.

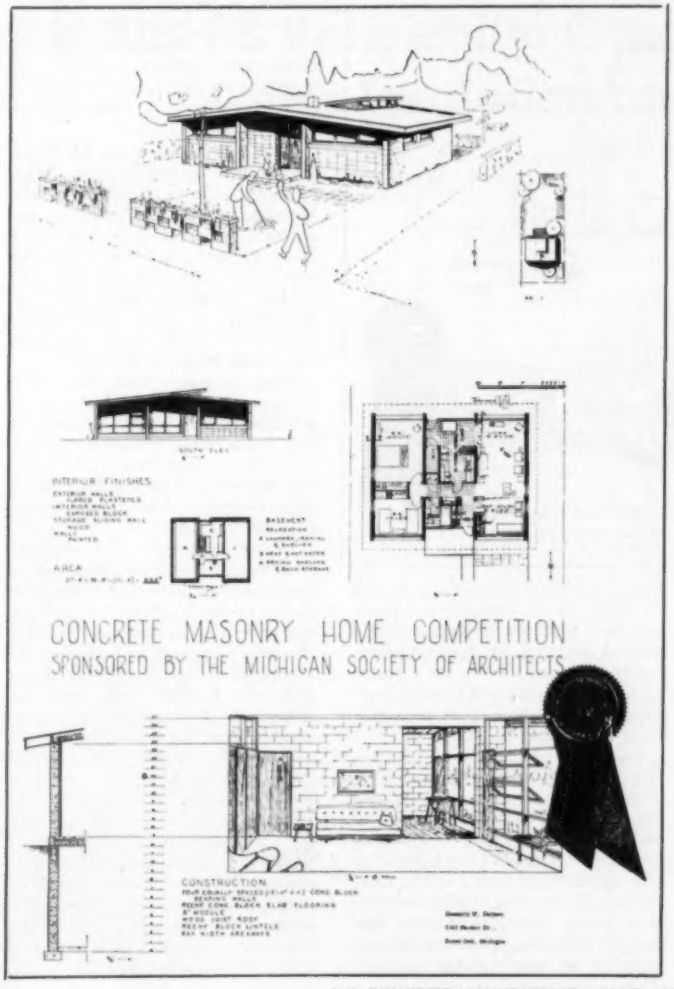
Experience of Michigan group indicates that both immediate and long-range advantages may be achieved at reasonable cost

this instance they were laid down by the Michigan Society of Architects, and the program of the competition was written by their representative. However, the detailed requirements for the home designs to be produced in competition and the requirements for eligibility to enter were determined entirely by the association.

Any architect, draftsman or student of architecture, registered, employed or studying in Michigan who was a *bona fide* resident of the state was declared eligible to participate in the competition. Preparation of program requirements called for consideration of such items as the point in the home building market toward which the design should be directed. What should be the limiting plan size? How many bed rooms? To what extent should the program insist upon the use of concrete masonry? What about architectural style? These and many other questions were the subject of a general membership meeting which yielded an unlooked for dividend by providing one of the greatest cohesive forces yet developed within the group. Here was something the boys could sink their teeth into.

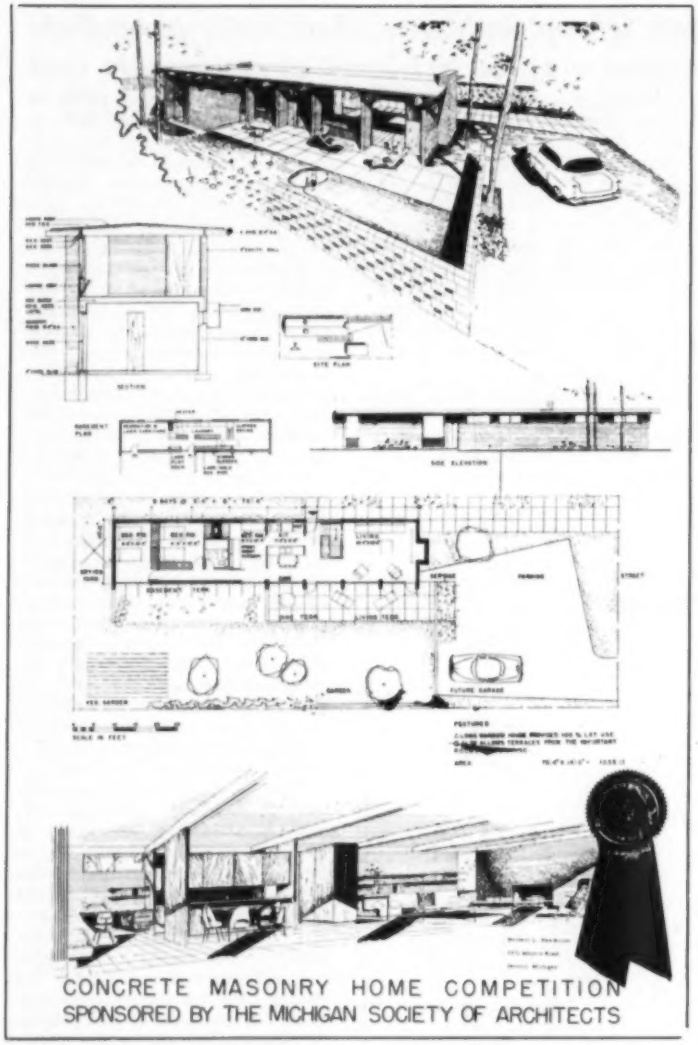
The result of this meeting was a set of requirements which called for the design of a one-story home in which concrete masonry was to be used to the maximum consistent with common-sense construction. Exposed concrete masonry in exterior walls was made mandatory. The limitation of 1,100 sq. ft. of living area and a requirement of three bedrooms (one of which might be arranged to serve as a study and/or bedroom) indicated the association's decision to beam the designs toward that class of home-seekers so rarely given recognition, the so-called limited-income group. The requirement of full basement design was academic from industry's point of view. It was decided to permit complete freedom in architectural style, including roof construction, although the desirability of employing substantial roof overhangs with concrete masonry was pointed out. The lot established for purposes of design was restricted to not more than 50 ft. of frontage, and it was considered to be reasonably level. F.H.A. minimum requirements governed.

This design by Donnally W. Palmer of Royal Oak, Mich., won the second prize of $750.



The association set aside $3,250 for cash prizes to be awarded to 13 winning designs. Starting with a $1,000 first prize, a $750 second and a $500 third prize, ten honorable mention awards of $100 each followed to make up the remainder of the total. Not only did this array of cash awards compare favorably with those offered in a number of national competitions, but the announcement of their number and amount created active interest among those eligible to participate, to the extent that 185 requests for the competition program were received. Of that number 58 filed entries within the 60-day period allowed for preparation.

The fact that but one out of three persons requesting programs actually filed an entry may, on first thought, seem to be a disheartening ratio. The unexpected difficulty of the design problem, a natural tendency to delay until the last minute, and other factors contributed to what might appear to be a lessening of interest. As a matter of fact, the final entry results indicate the wisdom of providing adequate prize money. Another home design competition, conducted by Detroit's leading home building organization, attracted only 14 entries with three prizes of $800, $400 and $200 for a home plan having far less restrictive design require-



This design, winner of the $500 third prize, is the work of Herbert T. Hawthorne of Detroit.

ments than those called for in the association's program.

With the competition program written, the prize money set aside, and some preliminary indications of interest generated by advance publicity given to the competition by *The Bulletin,* official publication of the Michigan Society of Architects, it was decided to give further impetus to the program by means of a luncheon to which members of the press from all association member locations in the state were invited. Members from localities which failed to send press representatives made use of prepared press releases sent to their local newspapers. Some members used the releases as background material for special advertisements which tied in their plants with an interesting and unusual local story. Press notices were uniformly good throughout the state.

In addition to furnishing competition programs to fill 185 specific requests, each program accompanied by a copy of Michigan's issue of concrete masonry details, a similar package was mailed to more than 500 architects of record in the state. By July 15, the deadline for competition entries, concrete masonry had literally rung the private or business doorbell of nearly every architecturally-trained person in the state of Michigan. Concrete masonry and the Michigan competition was news.

After five architects, selected from the Michigan Society to act as an official jury of award, had met and determined the 13 prize winning designs, the 58 original drawings admitted to judgment became the permanent property of the Concrete Products Association of Michigan, and were available for public display. The opening exhibit, which was semi-public, took place at the August, 1952, meeting of The Michigan Society of Architects held on Mackinac Island. The cash prizes were formally presented during this convention. Then came the J. L. Hudson Company show in Detroit for three weeks in September, during National Home Week. The local art museum in Saginaw held a very successful exhibit during the month of November in co-operation with the association's Saginaw member, and there was an early January showing in Harbor Beach, a community of about 2,000.

As far as showing in Michigan is concerned, the exhibit is constantly available only to members of the Michigan group, and schedules are arranged on a first-come-first-served basis. Presently tentative plans and past experience indicate that the original drawings which make up the exhibit are likely to be retired from active service only after they have been worn out by use.

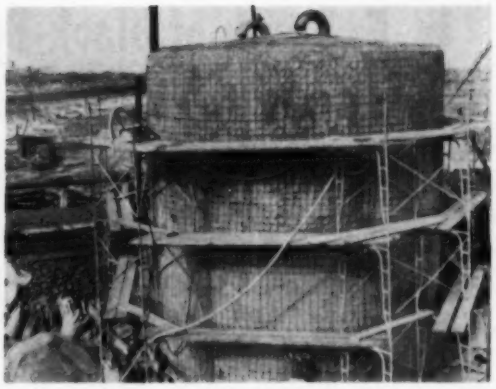
Many questions have been asked by the public since its first contact with the exhibit. But there are four that recur most frequently: Have any of these homes been built? What will they cost? Can I get a book of these designs? Are the blueprints available for them?

In answer to the first question, two association members located in the Detroit area have made arrangements to start construction of the first prize winner. Standard Building Products Company is working with a production builder to produce one unit, and Cinder Block, Inc., has joined with a custom builder to erect another from the same design.

By careful survey of the work as it proceeds in both instances, it is hoped to obtain accurate cost figures which will answer the second question. The association's answer to the third most frequent question is a 32-page publication entitled *Prize Winning Home Designs in Concrete Masonry.* Prepared and issued by the association, the booklet contains 26

(*Continued on page* 178.)

A rotary motion is used in gunning vermiculite insulating concrete direct to the surface of the metal tank. Note dryness of rebound.



View of a tank coating job in progress, showing mesh applied to the vermiculite concrete before the finish coat of sand concrete is gunned.

Air-Placed Vermiculite Concrete For Insulation and Fireproofing

A RECENT development that opens new possibilities for concrete as insulation and fireproofing is the air-placement of vermiculite concrete over steel, wood, and masonry surfaces. During the last year this material has been air-placed successfully over large metal tanks, as well as inside and outside wood and masonry buildings.

This wooden hopper building presented a fire hazard before treatment. (See illustration at extreme right for appearance after treatment.)

A 1:12 mix is ordinarily used: 1 part portland cement to 12 parts vermiculite aggregate. When air-placed, this mix has a "K" factor of about .95, a density of 40 lb. per cu. ft., and a compressive strength of about 190 lb. p.s.i.

As to fire resistance: a recent test of a pilot model steel tank fireproofed with 2¼ to 2¾ in. of vermiculite concrete disclosed that 4 hours and 20 minutes were required to raise the temperature of the steel to 700 deg. F. when exposed to an average furnace temperature of 1890 deg. F. After the test the material retained approximately 75 percent of its original structural strength, and there was no serious spalling or cracking.

Thickness varies with the insulation factor and fireproofing required. The usual thickness is from 2½ to 3 in. If exposed to the elements or subjected to hard wear, the concrete is covered with air-placed sand concrete.

One of the great advantages of air-placed vermiculite concrete is fast application. On some jobs an average of about 300 sq. ft. per hour has been covered with a 1½-in. thickness with one machine.

In the gunning operation, the dry material (premixed) is placed in the hopper and is pumped through a hose to the nozzle head of the gun. As the cement and aggregate hit the gun nozzle, they are mixed with water. The amount of water used depends on the type of job and whether fresh or rebound material is being used.

Because of the light weight of this aggregate, a low air pressure can be used—from 8 to 15 lb. This also reduces rebound. Unlike sand concrete rebound, which must usually be discarded, vermiculite rebound can be shoveled up and used again; hence, there is no waste. A canvas spread on the ground will catch the particles and keep the rebound clean.

The completed hopper building fireproofed with 1 in. of vermiculite concrete and a ¾-in. wearing surface of sand concrete.

W. F. Smith of Black-Brollier

Heads Texas Concrete Masonry Assn.

WILLIAM F. SMITH, vice-president, Black-Brollier, Inc., Houston, was named president of the Texas Concrete Masonry Association at the annual spring meeting, held May 1 and 2 at Corpus Christi. Mr. Smith succeeds Vernon Cole, Texas Concrete Works, Waco, who becomes chairman of the board. Other officers elected were R. P. Brown, Lubbock, vice-president and director; and Everett E. Knott, Dallas, secretary-treasurer and director.

Directors elected include the following: Vernon Jewell, Waco, Tex.; Lewis Lloyd, New Orleans, La.; and C. B. Jones, Pharr, Tex.

Host company for the meeting was the Texcrete Company of Corpus Christi. Delegates paid a special visit to the plant after the final business sessions on May 2. The association chose Amarillo for its fall meeting, with the Crowe-Suelde Cement Company as the host firm.

New curing methods occupied much of the time and attention of the delegates at Corpus Christi. Glenn C. Barnes, N.C.M.A. past president, discussed infra-ray curing and other tests conducted at his New York plant which were related to high-temperature curing at 350 to 400 deg. without pressure. He also cited shrinkage tests run at Toledo University and discussed the Corps of Engineers report (especially specifications of 30 percent moisture content) and covered storage. Other subjects mentioned were auto-clave curing, yard cubing, truck unloaders, and job cubing.

Cedric Willson, vice-president, Texas Industries, Inc., Dallas, brought members up to date on drying and shrinkage tests which he has been supervising at Texcrete plants in Texas. He also outlined the Southwest Research Institute program of research in a new type of inverted triangular foundation. The Texas Industries engineer declared if tests are successful, this new type of foundation may greatly increase the sales potential of practically all masonry manufacturers.

The association authorized the expenditure of $5,000 to aid in the continuance of work by the Southwest Research Institute on the new type of foundation.

In his address Ed C. Burris, Houston, vice-president and general manager of Texas Manufacturers Association, urged businessmen not to become complacent because of the new administration in Washington.

Cedric Willson, vice-president, Texas Industries, Inc., Dallas, spoke on technical problems in the industry at the annual spring meeting of the Texas Concrete Masonry Association, held at Corpus Christi.

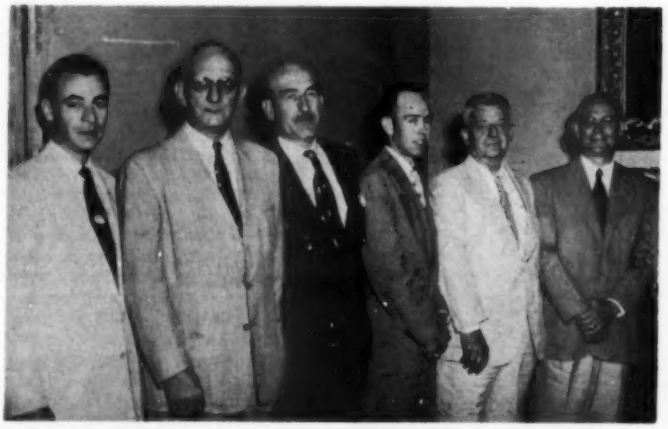
"Management over the years has been negligent in public affairs," he stated, "even though American business institutions are made possible by the freedom form of government provided by our constitution." He declared that management must properly exercise the leadership vested in it or American institutions will deteriorate and society will fall prey to some form of "ism" inimical to the nation's capitalistic structure.

S. H. Westby, P.C.A. manager, Housing and Cement Products Bureau, urged greater use of public relations in the promotion of concrete masonry. His proposal included local advertising tied in with the national advertising program of P.C.A.; adequate and proper information for prospects, including names of architects, builders, and lending agencies; and a list of available homes for prospects to visit.

"It will pay masonry manufacturers generally to become more sales conscious before the present market starts tapering off," Mr. Westby said.

At the final session the association voted an annual scholarship fund of $750, to be administered by the Texas Society of Architects. New members admitted at the spring meeting were Dodds and Fountain, Greggton, Tex., active, and the Stearns Manufacturing Company, Santa Fe, N. M., associates.

The newly formed Association of California Testing and Inspection Laboratories, which seeks to accomplish uniformity in testing and inspection of schools and other public buildings, to lower costs without endangering safety, and to guarantee compliance with building specifications, is composed of 13 testing laboratories. Among these is the Construction Laboratories of Los Angeles, official testing agency for the Concrete Masonry Manufacturers Association, headed by Jay Helsley.



Officers and directors of the Texas Concrete Masonry Association: William F. Smith, Black and Brollier, Inc., Houston, president; Everett Knott, Texcrete Company of Dallas, secretary-treasurer; Vernon Cole, Texas Concrete Works, Waco, director; T. H. Jewell, Jewell Concrete, Waco, director; Lewis Lloyd, Alatex Construction Service, Inc., New Orleans, director; and C. B. Jones, Texcrete of the Valley, Pharr, director.

Block Foundation Walls Tested in Atomic Blast*

TWO two-story and basement wood-frame construction dwellings with concrete masonry foundation walls, and eight family-type shelters, six of which were constructed of reinforced concrete masonry, were subjected to an atomic blast at Yucca Basin, Nevada, on the morning of March 17. The explosion was the equivalent in effect of 15,000 tons of T.N.T., or three-quarters the size of the Nagasaki A-bomb. The results were heartening to the concrete products industry because the foundation walls of the dwellings and the bomb shelters withstood the shock of the explosion with surprisingly little damage despite the prolonged shuddering of the desert.

Damage At 3,500 Ft. The so-called "near" house was erected 3,500 ft. from "ground zero", the location of the 300-ft. tower from which the bomb was detonated; and the so-called "far" house was built 7,500 ft. away from the center of the blast.

The basement walls were constructed of 8-in. concrete masonry units laid in cement mortar and supported on a typical continuous wall footing. No cross walls, piers, pilasters or buttresses were used to bolster the strength of the walls. The basement slab consisted of poured concrete, four in. thick. The plan of the building was 24 ft. 8 in. by 33 ft. 4 in., with the larger dimension oriented to face the full effect of the blast. The distance from the top of the basement slab to the top of finish first floor was 8 ft. 1 in., and the finish grade around the basement wall was 2 ft. below the first floor level. Concrete steps were provided from grade to the front door entrance. The first floor construction consisted of 2- by 8-in. joists at 16-in. on centers supported at the walls on a 2- by 8-in. base plate anchored to the basement walls with ½-in. diameter by 16-in. long bolts at a spacing of 60 in. on centers. The floor joists were also supported on two rows of 6- by 8-in. girders near the third points of the basement floor. The girders, in turn, were seated on 3½-in. diameter pipe columns. The sub-flooring was 1-in. material laid diagonally and covered with 1-in. tongue-and-groove finish flooring.

The exterior wall framing was 2- by 4-in. studs at 16 in. on centers with 1-in. sheathing attached diagonally. The exterior finish was clapboard, and the interior finish, except for the basement, was ⅜-in. gypsum lath under a ⅜-in. coat of plaster.

"I told you we should've used BLOCK throughout."

The superstructure of the near house was completely demolished. Only the basement remained intact, sustaining damage that could be repaired. The front basement wall was tilted inward about 1 in. at the top, with the cleavage occurring at the intersections with the end walls. The entire length of the walls was without a crack except where failure occurred at the end walls. The rear wall sustained slight damage caused by the wood girders thrusting the superstructure against the top two courses of block. These courses were dislodged outward to the extent that if repairs were contemplated, the courses would have to be rebuilt. It is interesting to speculate from the results of the effects of the explosion on the near house, whether a reinforced bond beam around the periphery of the building at the top course of masonry would have prevented any damage to the basement wall.

Damage At 7,500 Ft. The far house survived the blast but with serious damage to the superstructure. No damage was inflicted in the basement. The wood frame was jarred loose from the foundation walls. The first floor joists were broken and the floor sagged. The plaster on the walls was cracked and about 10 percent had fallen from the ceiling. All the windows but one had been smashed and most of the glass had blown inward.

The structural damage was greatest in the upper stories. The rafters facing the blast were separated from the ridge beam. The roof beams were splintered. The level of radiation in the basement was only one-fourth the amount in the upper floors.

Bomb Shelters Two bomb shelters, each to accommodate four people, were erected in the far dwelling. The less expensive model, costing $40 in materials, was a simple lean-to against the concrete masonry basement wall. The more expensive shelter, costing about $100 for materials and seating four people comfortably, is a box-type shelter built in the corner of the basement and entirely separate from the walls. Mannequins placed in these shelters were not dislodged.

The architectural expert on the scene summed up his impression by saying that in this typical American home *only the basement had proved relatively safe*. Even at close range to the atomic fury, the basement of the houses remained substantially undamaged. The houses were not equipped with drapes, rugs, or other inflammable items, gas pipes or electrical conduits so essential in a home. It was believed that if the far house had been furnished with such appurtenances, the house would have caught on fire and burned to the ground.

Eight family-type bomb shelters were erected under ground at various distances from "ground zero". Six of these structures were built of 8-in. concrete masonry, composed of lightweight aggregate, with all the cells filled with concrete. In size, the structures were 4 ft. by 6 ft. 8 in., in plan, and 4 ft. high, completely buried in the ground, with either concrete or wood roofs. Entrance is gained by means of steps protected by side walls of concrete masonry.

The concrete masonry shelters were constructed at the following distances from the center of the blast: one at 1,350 feet, one at 1,450 feet, three at 1,800 feet, and one at 3,500 feet. All but one of the concrete masonry shelters emerged from the test unharmed. The shelter that was damaged was situated at the 1,800 feet distance, and was due to the failure of the workman to install the anchor bolts which tie the roof to the walls. The omission resulted in one of the longer walls breaking in the center of the span. The rupture ran vertically, and the wall caved inward. The opinion was expressed that if the shelter had been built according to plan, it would have withstood the effects of the blast undamaged, as did the others.

*We are indebted to the National Concrete Masonry Association for permission to reprint this timely report on the effects of an atomic blast on dwelling structures.—THE EDITORS.

Automatic Protection Against Freezing Of Bin Aggregates

IN the colder sections of the United States it is not unusual for bin aggregates to become frozen several times during the winter seasons. Generally aggregates, through having been washed, contain substantial quantities of moisture, and since bins are rarely insulated, and are often exposed to the elements, it is only natural that they should freeze solid when temperatures drop below the freezing point.

By WILLIAM J. SHORE
Shore Engineering, New York

Through the application of steam through pipe nozzles or the use of blow torches, in a matter of time the heat applied melts the ice, and aggregates flow again. Generally, these thawing operations are troublesome, creating confusion and making it impossible to maintain scheduled deliveries.

It is apparent that not much attention has been given to this recurrent problem, although there are several means readily available, all easily applied at not too much expense.

The author presents a means for the prevention of freezing of aggregates which is easy to install, not too costly, and entirely automatic in its operation.

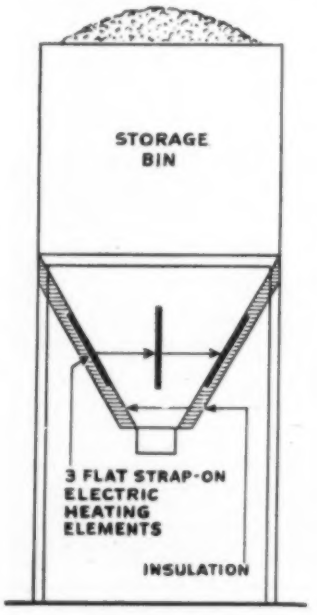
Briefly, heating is done through the installation of a number of varied sizes of electric strap-on heating units on the bottom of the bin, all of which become energized through an automatic thermostat set to turn on the electric power whenever the temperature reaches 35 deg. F. To make the heat effective and to insure its distribution through the aggregates, the lower sides to which the electric heaters are attached are covered with a layer of insulating material. There is no standby cost for fuel or electricity, power being used only when surrounding temperatures drop below 35 deg. F.

Electric strap-on type heating units are available for 110 volts or 220 volts. They are made in various sizes—1,000, 2,000, 3,000, or 5,000 watts each. Three 5,000-watt units, for example, would provide about 20,000 B.t.u.'s.

It is not our main purpose to heat the aggregates, except insofar as it may be necessary to do so in order to prevent the material from freezing. Thus, if the temperature drops to 32 deg. F., our facilities need at most to provide for a rise of about 3 deg. F. In the event that temperatures drop to zero or lower, it is always possible to increase the number of such strap-on heaters until there is sufficient capacity to prevent freezing of the material in the bins. Since conditions vary greatly, no definite capacities are recommended.

The strap-on heaters are attached to three sides of the sloping lower sides, roughly about 1 ft. above the discharge gates. The accompanying diagram indicates the arrangement.

Electric service (220 volts, 3 phase, 60 cycles) is connected to one automatic 3-pole disconnect switch. The switch goes on or off from a contact made by a thermostat. The bulb or controlling element of the thermostat is left in the open air, exposed to the weather. When the temperature drops to 35 degrees, the thermostat goes on, heat is created in the heating elements, and heating of the aggregates begins. When temperature goes over 35 degrees, the heat is turned off. This operation is entirely automatic.



• Sketch showing location of strap-on electric heating elements.

Need for Insulation It is necessary that all four surfaces of the bottom of the bin are covered with some type of insulation. If there were no insulation, all of the heat from the heaters would be dissipated to the surrounding atmosphere and no rise in heat would take place in the aggregate. If insulation is applied, only a small part of the heat goes through the insulation, roughly about 10 percent, and 90 percent goes through the bin sides and enters the aggregates. The longer the heat is left on, the more heat goes into the aggregates, and the heat then begins to spread. The only direction it can take is upward. If the temperature of the bin aggregates around the discharge gates reaches 50 or 60 degrees, the aggregates above will also be heated, although not to the same degree.

Merely to give an idea of what such an installation might cost, the following figures are given for a bin measuring 10 by 10 ft. (For larger bins, the figure should be increased in proportion to the increase in area. For a bin 14 by 14 ft. the cost would be twice as great.)

Electric Automatic Contactor	$ 24
Thermostat	14
Three 5 kilowatt heating elements	60
Insulation	80
Materials	$178
For wiring installation	$ 50.00
Applying insulation	50.00
	$100.00 $100
Total cost of labor and materials	$278

This type installation merely prevents bin aggregates from becoming frozen solid. For larger bins, the costs are higher; when temperatures drop to very low points, it becomes necessary to install more units and increase the heating capacity.

Up to the present not much data has been assembled on the matter of preventing freezing of aggregates. However, with the knowledge we now have, and with the materials and equipment that is available winter production slow-ups due to frozen aggregates should cease to plague operators even on extremely cold days.

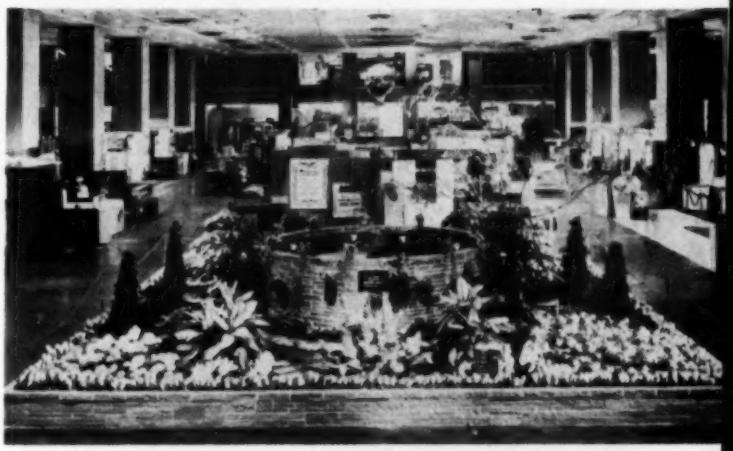
Concrete Masonry Exhibits Play Important Role In Kansas City Home Show

another P-Q exclusive

THE fifth annual post-war Homes Show, sponsored by the Home Builders Association of Greater Kansas City, set new records in attendance, number of exhibitors, and diversity of products shown. With well over 102,000 paid admissions in the seven-day run—April 12 to 18 inclusive—(over 7,000 more than the previous high) the event drew visitors of a very desirable type. The 154 exhibitors reported not only definite interest in their various products, but also a large volume of closed sales. The show presented tangible evidence that interest runs high in home building and modernization in this area.

Much of the attractiveness of this show can be credited to the striking and interesting effects created by the concrete masonry exhibitors, who made good use of the versatility of their products.

The beautiful, large centerpiece and feature display of the show was a gushing fountain surrounded by a garden. Occupying a large area at the front entrance of the exhibit hall, it was the focal point of attention for everyone. The fountain base was covered with vari-colored "Vibracrete" split rock units supplied by the Concrete Building Units Company. This firm also furnished the Vibracrete patio slabs for the walk which surrounded the exhibit. Constantly changing submerged colored lights played on the jets of water which spurted from the fountain.



● This attractive garden-scene, exhibit of the Concrete Building Units Company, contained a beautiful garden surrounding a fountain built of Vibracrete split rock units.

The surrounding floral display, including banana trees, palms, weeping willow trees, and clumps of strelitzias, anthuriums and other unusual flowers, was designed by the Floral Industries Association of Kansas City and prepared by Manncraft. The masonry work was done by the M. E. Harrison Masonry Company. This display resulted in a number of jobs for the Concrete Building Units Company, plus a great many prospective customers.

The Carter-Waters exhibit featured the first showing of the "Haydite House", an attractive home, designed to sell at a popular price.

It is fully competitive in cost with comparable houses built of other conventional materials. The exterior walls are of 6- by 8- by 16-in. Haydite blocks to which furring strips are applied for either lath-and-plaster or paneled interior walls. The floor is constructed of Haydite concrete soffit blocks, Acrow centers being used for temporary support during construction. Basement walls are 12-in. Haydite concrete blocks laid on reinforced concrete footings. Exterior basement surfaces are back plastered and treated with asphalt water-

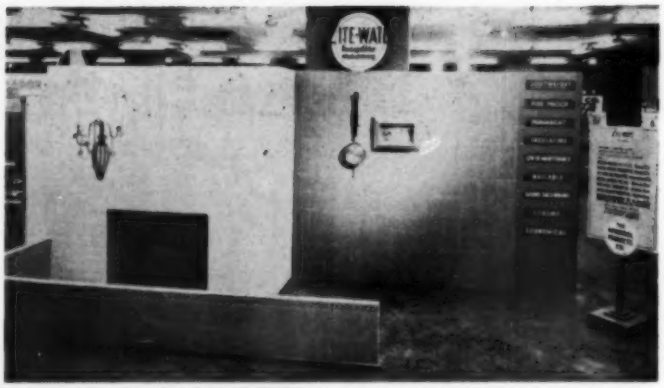
● Carter-Waters featured its "Haydite House"—both in miniature (left) and life-size (right). This display also included detailed house plans.

● Most inviting was the patio scene prepared by the Cinder Concrete Products Company, which included a fireplace chimney. A drawing for 550 patio blocks was an effective feature of this display.

proofing. As in the case of the exterior walls, Blok-Mesh masonry wall reinforcing was used in the basement.

An exact scale model, in full detail, attracted much attention, as did also a full-sized section of the house completely finished, built exactly the way a complete haydite house is being constructed in Milhaven addition, Johnson County, Kans. Detailed architect's plans were also displayed.

The Cinder Concrete Products Company had as its exhibit an attractive patio, together with a section of a house front including a fireplace chimney and a front doorway. In this display the company's various



● Contrast of red-orange and oyster white added much to the interest of this exhibit, a simple provincial-type fireplace and its adjoining wall, worked out by the Mineral Products Company.

types of concrete masonry units were used effectively, including new lightweight "Clalite" block. As the line of this firm includes a wider range of kinds and sizes than the average block plant, it was possible to show home owners some interesting possibilities in concrete masonry construction. A free drawing for 550 patio blocks was a successful promotion stunt.

While simple in conception, the Mineral Products Company exhibit of a large provincial-type fireplace achieved a dramatic quality through the simplicity of its lines and the effective use of a striking red-orange wall paint on the wall, which contrasted well with the oyster white color of the fireplace proper. Constructed of "Lite-Wate" aggregate blocks, the exhibit listed on neatly lettered plaques at one end of the wall the various advantages of lightweight block construction, and showed on a separate display board the various block plants supplying Lite-Wate blocks in this area. The fireplace was decorated by shining copper utensils.

In addition to the exhibits described above, the following firms also featured concrete masonry and related items in their exhibits: the Barbour Concrete Co., Curriers of Kansas City (concrete trash burners), the Kansas City Concrete Co., (displaying a transit-mix truck), the Perma Stone Company, Sitton Septic Tanks, and the Stewart Sand and Material Company. While not as elaborate in execution as some of the larger masonry concrete exhibits described in detail, each of the exhibitors did credit to the industry; and it can be said that the concrete masonry industry capitalized on the event.

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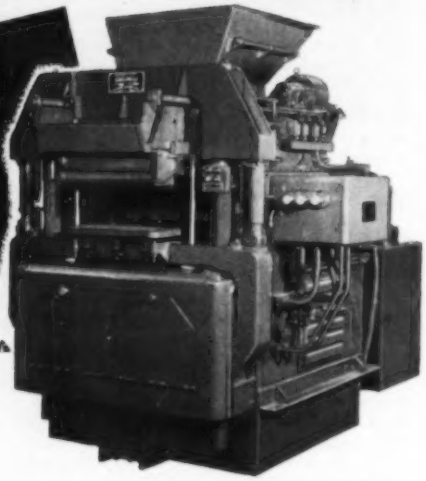

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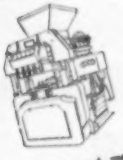

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Trade Literature

Stop Emergency Shutdowns, Accidents, Expensive Repairs, Production Losses Before They Occur. Form No. 149. This folder presents typical applications of non-destructive testing of parts by magnetic and sonic methods of inspection. A portable unit for field and shop use is described and pictured. Advantages of non-destructive testing are explained and several methods are briefly described. Magnaflux Corp.
Our Identification No. 101.

The Yale Pak-Loader fork truck system of material handling. Bulletin P-1173-A. This bulletin pictures and describes a system for handling materials in unit loads without the use of pallets. Illustrations show how a special steel plate is pushed under the load and then raised on the forks for transport. A pushing device shoves the load off the plate while it is being held by the fork. Yale and Towne Manufacturing Company.
Our Identification No. 102.

Whiteshowers Automatics. This folder presents a line of automatic and hand operated sprinklers. Types of nozzles, hangers, couplings, oscillators and sprinklers are shown and described. These devices are needed wherever there is a need for moistening as in curing concrete products, dampening areas to reduce dust, and other places where an area needs to be covered with a mist of water. Whiteshowers, Inc.
Our Identification No. 103.

Ayr-Trap, the air-entraining agent. The 16 pages of this bulletin cover the use of air-entraining agents in concrete with particular reference to the material mentioned. Illustrations are of a general nature while the text tells the story of air-entrainment, its value, uses, and properties. Tables shown the comparisons with normal concrete. A. C. Horn Company.
Our Identification No. 104.

A sure cure for concrete, Littleford Vapor. Clarkson "Kwik-Steam" Generators. Form-MP-20. Typical installations of the steam generator in curing concrete products are shown. The unit is pictured and described and specifications are given as well as typical layout for a curing room. General information is given about the unit. Littleford Bros.
Our Identification No. 105.

Kwik-Mix Moto-Bug. KM328. Illustrations showing the Moto-Bug power wheelbarrow in use fill most of this four-page folder. Hopper, platform, and lift truck attachments are shown in a variety of industries. Features of the machine are shown in a bottom view. Kwik-Mix.
Our Identification No. 106.

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There's Trouble Ahead for These Buildings. The front of this folder shows typical examples of water damage and efflorescence in masonry buildings, while the center shows comparative photos of treated and untreated surfaces. The material, a silicone water repellent, is described in the text. Dewey and Almy Chemical Company.
Our Identification No. 107.

Use of Chicago Fly Ash In Modern Concrete Mixes. This file size book gives a complete story of fly ash as it is used in concrete mixtures of various types. History, source, its action in concrete, tests of various attributes of concrete made with it, advantages, chemical composition, and specifications for its use are some of the points covered. The facts of fly ash in common and technical language are given in a concise manner. Chicago Fly Ash Co.
Our Identification No. 108.

The Kewanee-Iron Fireman Boiler-Burner Unit. Form No. 2514. This 14-page full color catalog describes and gives complete data on a line of boiler-burner units for high or low pressure heating, power, or process steam. Described are oil, gas or oil-gas burners combined with a boiler and the necessary controls for supplying a packaged installation for heat or power steam generation. Tables give ratings, dimensions and other data while drawings and cutaway views show some of the features of the unit. The controls are described and the central panel is shown. Iron Fireman Manufacturing Company, and Kewanee-Ross Corp.
Our Identification No. 109.

For Better, Stronger Walls Use Masonry Wall Reinforcing. The four pages of this folder present the results of tests on cracking caused by pressure and shrinkage on concrete block wall panels made with and without reinforcing in the mortar joints. Tests of bond wire styles and methods of application of the masonry reinforcing mesh are also included. Adrian Peerless, Inc.
Our Identification No. 110.

Tru-Ax Hi-Production Block Splitter. Three models of block splitters are covered by this folder. A large electrically operated unit is featured. The machine is pictured and thoroughly described. Specifications are included. Two other models are pictured and briefly described. They are a pneumatic model and a hand model. Truax Machine and Tool Co.
Our Identification No. 111.

The New "Rocket" Revolving Drum Truck Mixers. Photos of loading and discharging of this mixer are shown. Close-up views of major features are included and a keyed photo pointing out features is shown. The folder explains the advantages and lists the features that are included in the new model. Concrete Transport Mixer Co.
Our Identification No. 112.

Hex Type Precast Concrete Lintel Forms. This single sheet lists the lintel forms needed for an average house. The sizes needed for windows are given as well as the steel needed. Standard mix formulas are included and the prices of the lintel forms. J. W. Appley & Son.
Our Identification No. 113.

F. C. George Machine Company. This small size folder illustrates two models of block machines, mixers, and conveyors. The machines are briefly described. The style of blocks and the pallets are given also. F. C. George Machine Company.
Our Identification No. 114.

Modern Industrial Storage Systems. Concrete stave silos are the subject of this 12-page bulletin. Among the headings are: foundations; roofs; floors and shelves; walls; and details of storage system construction. Photos and drawings are used to bring out construction features in a graphic manner. Typical installations are shown as well as a few of the unusual ones. The Marietta Concrete Corporation.
Our Identification No. 115.

The '53 Mogul. A folder that gives the specifications of a 3-block machine. The advantages of the line are presented and drawings of the various shapes that can be made are shown. Testimonials are included and the major features are listed. Lith-I-Bar Co.
Our Identification No. 116.

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NEW MACHINERY and SUPPLIES

• Portable Vibrator

A self-contained vibrator has been announced by the Mall Tool Company, 7725 South Chicago avenue, Chicago 19, Ill.

The Mall "2MG" Concrete Vibrator is designed to operate from places that are normally inaccessible for the usual

stationary machines. A five hp. gasoline engine, weighing only 21 lb., provides the power. This is transmitted through a flexible shaft to the vibrating head. The entire unit is easily carried by hand and operated where needed.

Our Identification No. 117.

• Fork Truck

Two new model fork trucks have been brought out by the Hyster Company, 2902 N. E. Clackamas Street, Portland 8, Ore.

They are powered by heavy-duty water-cooled industrial engines and are mounted on cushion-type tires. Other features include compactness, maneuverability, and durability.

The "YC-40" has a load capacity of 4,000 lb. at 24-in. load center, while the "UC-30" has less counterweight and handles 3,000 lb. at 24 in. Both models have 9 ft. uprights and 30 in. of free lift.

Both models will turn in their own length and will negotiate grades of more than 20 percent empty or loaded. They have heavy-duty brakes, automotive-type controls, quick-change clutches, and accessible service points.

Our Identification No. 118.

• Vibrator

A concrete vibrator has been adapted to loosening cement in bins by the use of short sections of pipe fastened to the outside of the bin. The vibrating head of a Stow "BU" concrete vibrator is inserted in the pipe and the vibration is transmitted to the bin.

This vibrator is powered by a 2 hp.

electric motor and can be suspended so that it is portable or so that the flexible shaft and vibrating head can be used in several of the pipes. Stow Manufacturing Company, Binghamton, N. Y. makes the vibrators.

Our Identification No. 119.

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• Four-Axle Truck

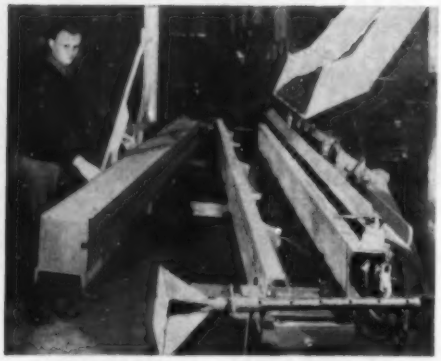
A four-axle truck has been developed for use in ready-mixed-concrete operations to achieve higher legal payloads through better distribution. The fourth axle is an additional steering axle coupled to the standard front axle of a truck by means of a walking beam. The result is a tandem bogie that steers all front wheels with center poise steering.

Besides providing economic benefits to the trucker, this new development is said also to assure more economic and safer use of existing highways. It is believed that the improved weight distribution will mean less wear and tear on highways and bridges, and will also result in fewer units to haul a given tonnage. A load on a single vehicle is not subject to "jack-knifing" as is a trailer. Equipped with dual steering tandem front axle, the truck has the same turning radius as a truck with a single axle. According to the manufacturer, the axles carry an equal distribution of the load under all operating conditions, and the center poise steering eliminates skidding of tires because four wheels steer without cramping or binding.

The Rex-Spangler dual steering tandem front axle is offered by the Chain Belt Co., 1600 Bruce St., Milwaukee, Wis.

Our Identification No. 120.

There's a Steady Market for KENT-MADE LINTELS and SILLS



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S 6	2'8" up to 6'
S 7	2'8" up to 7'4"
S 8	2'8" up to 8'8"
S 9	2'8" up to 9'4"
S10	2'8" up to 10'8"

STANDARD LINTELATORS
Make lintels 7⅝" HIGH by 3⅝" 5⅝" 7⅝" WIDE in these lengths.

No. 6	2'8" up to 6'
No. 7	2'8" up to 7'4"
No. 8	2'8" up to 8'8"
No. 9	2'8" up to 9'4"
No. 10	2'8" up to 10'8"

Concrete sills and lintels are "pacing" the steady demand for concrete block.

Lower "on the job" installation cost is a strong factor influencing profit conscious builders.

You can do as hundreds of others have and put the complete KENT line of concrete products machinery to work for your "cash" benefit.

You can sell more KENT-MADE blocks, sills and lintels.

The KENT MACHINE COMPANY
CONCRETE PRODUCTS MACHINERY
Cuyahoga Falls, Ohio

• Tilting Mixer

A 4 cu. yd. mixer that tilts up instead of down is being marketed by the L. Burmeister Company, 4535 W. Mitchell Street, Milwaukee 14, Wis.

The mixer is powered by two 30-hp. gearmotors that are mounted on the tilting arms. The mixer is mounted so that the tilting point is off center and tilts the mixer up to allow for lower plant height. Tilting is controlled by a hydraulic power unit. Double action mixing blades provide for fast uniform batches. The drum interior and the blades are hard-surfaced for longer wear.

Our Identification No. 121.

BORN *with the* BEAUTY BUILT IN

Crowning its Cinderella success story, concrete block <u>now</u> can be made by <u>you</u> as a glamorous "*finished*" building material—a monolithic 100% concrete masonry unit produced in one piece by a simple extension of normal block plant operation.

Born with the built in beauty of a smooth, shiny marble-aggregate concrete face on one or both sides Marble Face Block is already used in hundreds of installations in the ultra-conservative New York market. During the last three years, nationally prominent architects and builders* have specified Marble Face Block for interior and exterior use on buildings ranging from modest homes to huge air terminals.

. . . face and block — one piece . . .

YOUR customers will likewise acclaim the cost saving versatility of block that permits them to erect *in a single masonry operation loadbearing walls, completely finished on both sides, one color inside and another color outside.*

You can add this highly profitable new business to your normal output with little departure from established manufacturing practice and at a moderate investment.

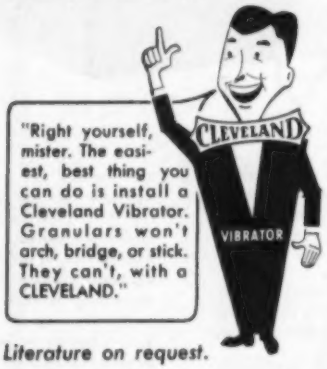
Our exclusive franchises offer fellow block producers every assistance — technical and marketing — to fully exploit the proven profit potential of our patented process. Please write us for more information.

*USED BY
N. Y. Central R. R.
Archdiocese of Brooklyn
Port of N. Y. Authority
Johnson & Johnson
Aluminum Co. of Amer.
Equitable Life Ass. Soc.
University of Pennsylv.
Swift & Company
Colgate-Palmolive-Peet
Atlantic Refining Co.
Corning Glass Works
W. T. Grant Co.
Bowdoin College etc.

MARBLE FACE BLOCKS INC

565 FIFTH AVENUE, NEW YORK 17, NEW YORK • PLANT: KENILWORTH, N. J.

"We're turning this plant upside down in an effort to figure out how to keep our concrete materials moving through bins, hoppers, railroad cars, trucks, chutes, screens, etc. What can we do?"


"Right yourself, mister. The easiest, best thing you can do is install a Cleveland Vibrator. Granulars won't arch, bridge, or stick. They can't, with a CLEVELAND."
CLEVELAND
VIBRATOR

Literature on request.

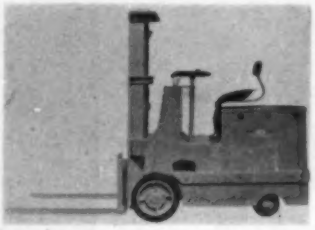
THE CLEVELAND VIBRATOR COMPANY

2710 Clinton Ave. • Cleveland 13, Ohio

• Electric Fork Trucks

A line of battery powered fork trucks has been announced by the Wright-Hibbard Industrial Electric Truck Company, Phelps, N. Y.

There are nine models in the line, ranging from 2000 lb. to 4000 lb. capacity. Load centers of 15, 20 or 24 inches



are available. Motors are 32-volt series-parallel wound. There are four speeds in either forward or reverse with automatic shifting.

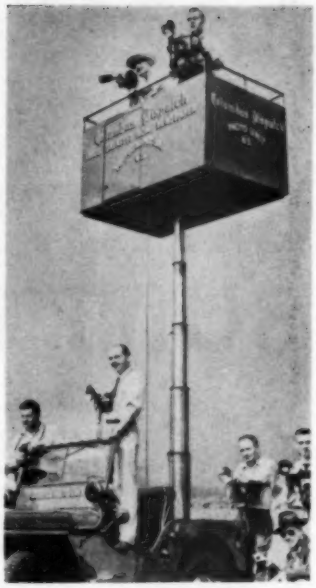
Other features include automotive type steering, hydraulic lift and tilt, and positive action brakes.

Our Identification No. 122.

• Hydraulic Lift

A lift that can be used for construction work has been introduced by Hamlin-Klock Corporation, 28 N. Marengo Ave., Pasadena, Calif.

The lift consists of a platform, hydraulic lifting cylinder, and lift platform. A Wisconsin self-starting engine powers the telescoping hydraulic column, which can support 6,000 lb. The lift platform can be raised to a height of 38 ft. or retracted



to a low of 13½ ft. The height and rotation of the lifted platform are controlled from the platform so that accurate spotting can be done by the operator or workman using the platform. Kickboard and guard-rail are standard safety features while the hydraulic system is safeguarded by a slow-descent feature and a by-pass.

Our Identification No. 123.

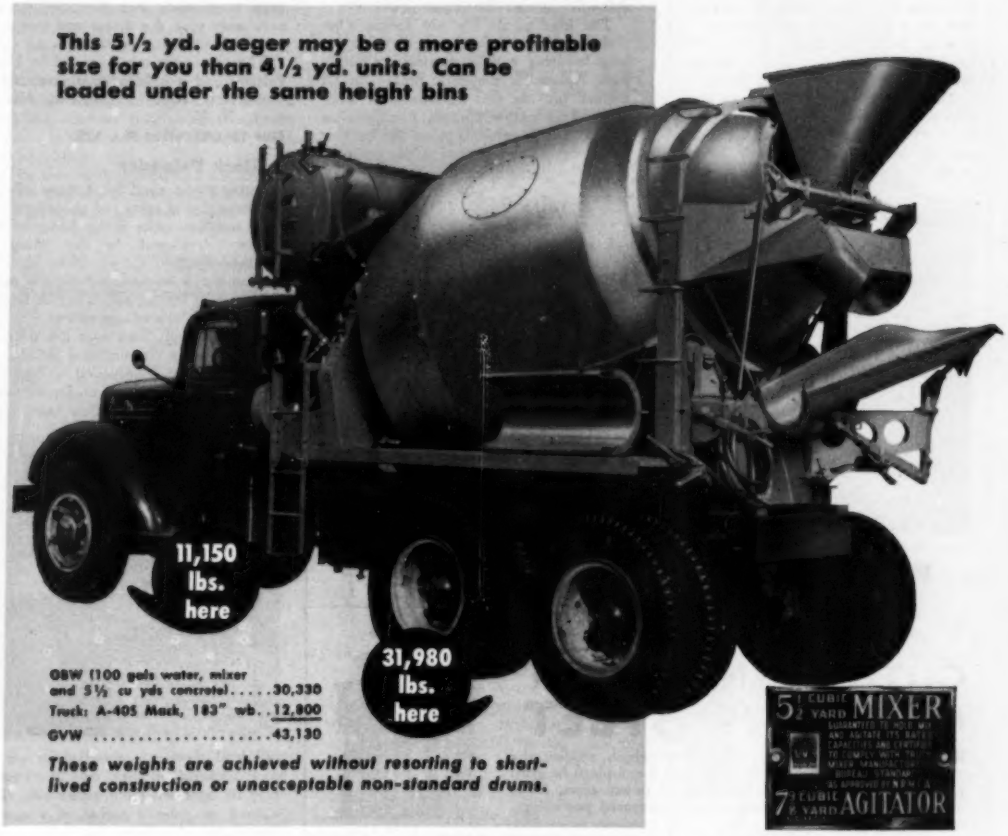
• Truck Crane

A crane with a 7-ton capacity is being made exclusively for truck mounting by the Harnischfeger Corporation, 4400 W. National Avenue, Milwaukee 46, Wis.

The "Miti-Mite" crane can be converted to any front end service such as shovel, back hoe, clamshell, dragline, magnet crane, and lifting crane. The entire deck of the machine is built as an integral unit and becomes the frame that supports all shafts, drums, gantry, engine, counterweight and attachments. Power is supplied by a six-cylinder gasoline engine driving through a four-speed transmission. All machinery is fully enclosed, running in oil, on anti-friction bearings. Hydraulic controls operate the machinery.

Our Identification No. 124.

22.2% more payload capacity but only 5.8% more cost


This 5½ yd. Jaeger may be a more profitable size for you than 4½ yd. units. Can be loaded under the same height bins
11,150 lbs. here
31,980 lbs. here
GBW (100 gals water, mixer and 5½ cu yds concrete).....30,330
Truck: A-405 Mack, 183" wb..12,800
GVW 43,130
These weights are achieved without resorting to short-lived construction or unacceptable non-standard drums.
5½ CUBIC YARD MIXER
7½ CUBIC YARD AGITATOR

Jaeger "mix plus" model 5½ HMD

This latest 5½ yd. Jaeger "Mix Plus" has 45 cu. ft. more drum volume (22.2% more rated capacity) than a standard 4½ yd. mixer, 45 gallons more water capacity when equipped with 2-compartment tank, and 3" higher discharge.

Yet it is only ½" higher overall (loads under the same bins), weighs only a few hundred pounds more than a 4½, mounts on the same class of trucks with only a slightly longer wheelbase, and costs only 5.8% more than a 4½ yd. unit comparably equipped.

In addition to the 20 latest "Plus" features that are standard in all 1953 "Mix Plus" models, 12 optional choices are available in equipment and attachments. See your Jaeger distributor for full details, or send for Specification TMH-3.

THE JAEGER MACHINE COMPANY

602 Dublin Avenue, Columbus 16, Ohio

World's largest Builder of Truck Mixers, Agitators • Pumps • Compressors • Concrete Mixers • Paving Machinery

• Truck Crane

Speed, efficiency and labor saving are the features claimed for a new truck or trailer crane designed primarily for handling concrete masonry units and brick. Instead of two men unloading a truck load of bricks or concrete blocks in three or four hours, with the Priester truck crane the vehicle's driver can do the same work alone through manipulation of a pushbutton mounted on the rear of the truck. Thus a load of 8,000 bricks or equivalent units can be loaded or unloaded in less than an hour.

The present crane follows an evolution from a hand-operated chain system for a Priester brick fork, the truck crane moving forward or backward along a truck or trailer. It also extends out to the right or left and may be moved up or down. These operations, now handled entirely by means of pushbuttons, provide for any required movement of the equipment.

Mounted forward and under a sheet steel covering, just back of the driver, is a self starting, gasoline air-cooled motor generator furnishing 3-phase, 60-cycle, 200-volt current for crane power.

The load motor has two speeds. One is slow for load lifting, the other fast for load lowering and for raising the empty fork. Automatic magnetic brakes on all motors provide for instantaneous stopping. Pushbutton control continues as long as the finger is kept on the button; however, in the event that the operator forgets to remove his finger from a button, limit switches are provided for all motors. Standard models are available in capacities of 3,000, 4,500 and 6,000 lb. Accessory items include side boards and jacks.

In test runs, an operator, doing his first unloading of a trailer containing 12 units of 105 blocks each, or a total of 1,260 blocks, completed the task in less than 40 minutes. For the same work it previously took the driver and two helpers three to four hours.

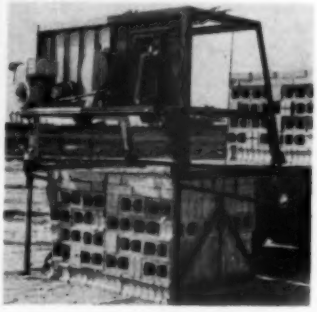
The apparatus was invented by Henry Priester and it is being manufactured by the Bradney Machine Co., Inc., Middletown, N. Y.

Our Identification No. 125.

• Block Unloader

Answering a need for a more efficient and economical means of unloading concrete masonry units is the Superlite Unloader, developed in the plant of Builders Supply Corp., Phoenix, Ariz. The unit can be mounted on any standard truck or trailer, and it can be bridged for truck to trailer operations. It handles all sizes of block that are normally handled with a conventional fork lift.

The carriage is propelled by hydraulic power through positive chain drives, so that movement is effortless even under full load. Power is supplied by an air-cooled gasoline engine, and the controls may be operated from either side. Tests carried out over a period of a year indicate that the device can reduce delivery costs as much as 50 percent on normal hauls. The Superlite Unloader is manufactured and sold by the Builders Equipment Company, 4012 North Central, Phoenix, Ariz.



Our Identification No. 126.

• Two Block Machine

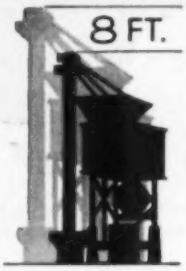
A vibrating two-unit concrete block machine, the "Duoblok," has been announced by the Duoblok Division of International Selling Corp., New York City. The Duoblok Senior is hydraulically operated, and has a rated capacity of 2000 block per day. The Duoblok Junior, a manual machine, will produce 1500 block a day.

Both models have cores mounted on independent core bars, which permit quick changing without disturbing the core box. The core box has interchangeable liners, dovetailed to place, eliminating most of the core box bolts. All wear

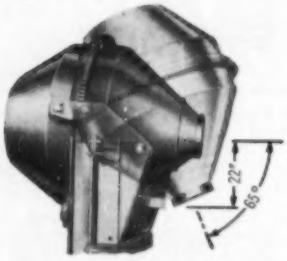
Burmeister

"TILT-UP" MIXER

CUTS PLANT HEIGHT AS MUCH AS 8 FEET



Burmeister's patented "tilt-up" feature—which reduces the mixer's headroom requirement—permits lower plant heights. This means easier crane loading, lower power costs, lower initial costs, less costly "conversions," increased portability, and better over-all control.



• In addition to reducing plant height, Burmeister's 3 cu. yd. "Tilt-Up" Mixer (left) provides a steeper 65° discharge from one spot, eliminates segregation of concrete and the danger of accidental discharge. It is simple to install, and has an integral hydraulic system—no compressor is required. Write for name of your nearest Burmeister Distributor, without obligation.

SEND FOR FREE CATALOG

Your copy of Burmeister's new illustrated Catalog is now available. Write today!

COMPLETE PLANTS FROM A SINGLE SOURCE

Burmeister

L. BURMEISTER CO., 4631 W. MITCHELL ST., MILWAUKEE 14, WISCONSIN

plates and liners are reversible, doubling normal life.

Vibration intensity can be varied to meet different aggregate specifications and insure minimum vibration time. All parts are easily accessible for adjustment and cleaning, machined to close tolerance and designed for long performance.

Standard machines are equipped to make standard units, with provision for manufacturing any special block falling within the limits of 8 x 16 x 16 in.

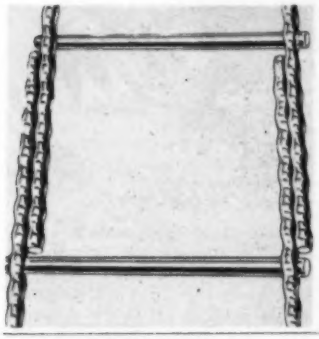
Our Identification No. 127.

• Masonry Mesh

Several improvements in the line of Wal-Lok masonry reinforcing mesh have been announced by Adrian Peerless, Adrian, Mich.

The new mesh is deformed and knurled to give maximum bond with the mortar. The cross wire are deep welded to the longitudinal rods and project beyond for greater anchorage. The rods used in the mesh are 3/16 in. diameter and have a tensile strength of 10,000 p.s.i. The cross wires are No. 9 gauge.

Our Identification No. 128.



• Four-Wheel Drive Scoop

A front end loader, the "Scoopmobile Models LD5 and LD10," is featuring four-wheel drive and four-wheel steer. This loader is a product of Mixermobile Manufacturers, 8027 N. E. Killingworth Street, Portland, Ore.

The new loaders feature two power axles that hinge together in the center.

By coupling the machine in the center full power is kept on all wheels. The bucket is hydraulically operated and has a discharge height of nine ft. or more. There are 8 speeds in either direction with the reversing transmission. Steering of the machine is done by power control of the coupling. Bucket capacity is 1 or 2 cu. yd. depending on the model.

Our Identification No. 129.

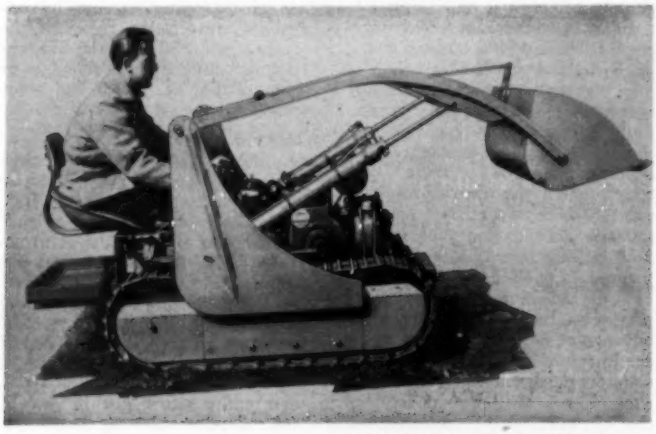
• Small Tractor Scoop

A small tractor-mounted scoop is being made by the Mead Specialties Company, 4114 N. Knox avenue, Chicago 41, Ill.

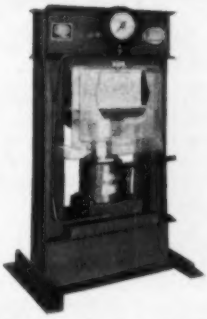
The machine consists of a small crawler tractor, powered by a 6 hp. gasoline engine. It is 40 in. wide, 95 in. long and 39 in. high. The bucket has a capacity of 5 cu ft. and is lifted by hydraulic cylinders to a height of over 6 ft. The machine has separate brakes and clutch for each tread and can pivot in an 8 ft. circle.

Called the "Mighty Mouse Model M-6" the machine can be supplied with rubber treads, rotary broom, bulldozer, and other attachments. It has two speeds forward and one reverse. Some of the suggested uses are: charging skips and mixers, clean-up, loading small trucks, snow removal and other bulk handling operations where large machines are not needed or cannot operate.

Our Identification No. 130.



Jones COMPRESSION TESTING MACHINE



for more economical mixes, and uniformly higher strength

By doing your own testing of concrete blocks and cylinders, you will immediately discover anything which may have gone wrong with the aggregate, grading, mixing, etc. This will help you maintain more uniform quality and develop more economical mixes. The Jones (formerly Yoder) testing machine is low in first cost, specially designed for concrete products plants.

Send for list of satisfied users and literature.

J. A. Jones CONCRETE MACHINERY

8 Horning Road, Pittsburgh 34, Pennsylvania

1¢ worth of Spray-O-Bond Plasticizer Per Bag

Gives Concrete Units Greater Cohesion Increased Plasticity, Better Texture.

We'll prove it! Send for a free sample of Spray-O-Bond Plasticizer today.

spray-O-bond

2225 N. Humboldt Ave. Milwaukee 12, Wisconsin

YELLEN
HI-SPEED
BLOCK MACHINE
PERTH AMBOY, N.J.

THIS TRADEMARK is your assurance of low-investment, high-capacity production of uniform, true-sided blocks, with minimum rejects and spoilage.

A YELLEN Machine means:

- Economical operating and maintenance costs. All parts interchangeable . . . few wearing parts.
- Efficient, auto-controlled output of 3,500 blocks per day with minimum crew.
- Easy operation . . . finger-tip controls and only 3 operating levers.
- Sturdily built for continuous, heavy-duty service.
- Highly versatile . . . makes all types of blocks from one core box.

Full details sent on request

JOHN J. YELLEN
381 Jefferies St., Perth Amboy, N.J.

Apprentice Masons' School Produces Prize Winners

Under the joint sponsorship of the Oregon Building Congress, the Mason Contractors Association, and the Bricklayers & Masons International Union, Local No. 1, of Oregon, Portland's apprenticeship school has achieved a fine reputation.

To qualify for a journeyman's card each apprentice must attend the school two 8-hour days each month, 9 months each year for 3 years. He devotes 4 hours of each class day to classroom work—blueprint reading, mechanical drawing, mathematics—and 4 hours to practical work under the direction of skilled craftsmen. This training must be supplemented by at least 6,000 working hours in the trade.

Instructors are Edward Neubauer, civil engineer, and Lester Heuer.

Slides Show Operations Of Ready-Mix Plant

Operations of the Moritz Ready-Mix plant at Effingham, Ill., have been photographed on colored slides by Don Moritz, plant manager.

The slides of the 1,000 cu. yd. plant are shown to groups to acquaint them with the care taken to produce ready-mixed concrete. These slides are scheduled to be shown at the coming convention of the Midwest Ready-Mix Concrete Association.

Architectural Competition

(*From page* 162.)

designs selected from the 58 submitted in competition. This publication also provides, in language the layman can understand, a vast amount of worth-while information concerning questions most frequently asked about concrete masonry. Arrangements for the preparation of working drawings have been made with the authors of the 26 designs included in the booklet. Detailed information regarding such arrangements may be secured at national headquarters of N.C.M.A. or from the Michigan association.

No report would be complete without some reference to what is always the $64 question: How much did it cost? Because the publication of *Prize Winning Home Designs in Concrete Masonry* is actually a by-product of the competition, separate and self-liquidating, its cost is not included. Excluding that, but including $3,250 paid out in cash prizes, the entire cost to the Michigan association, as of this date, amounts to slightly over $4,000. If nothing more than the highly intangible value of publicity is considered, this total cost is astonishingly small, compared to that required to carry on other forms of effective industry advertising over a similar period. How much individual design talent can you buy for $70, which is the average cost to date for each design submitted? What kind of visual promotion ideas are available in the form of original design reproductions at a price of slightly over $150 per page? That is the average cost per page of *Prize Winning Home Designs in Concrete Masonry*.

In planning and executing a promotional program such as has been described here, it is only natural to wonder how the same advantages could be gained for a larger segment of the industry by similar action in more than one state or region. Something recently appeared in print to the effect that this type of promotion is ideally suited to state or local operation. Need it stop there? Who can question the desirability of a project which pays off in association solidarity, in dignified publicity of a kind difficult to obtain in any other manner, in public interest, and finally in the provision of a storehouse of promotional material? All of these advantages, and others too, would surely result if similar competitions were operated concurrently in every state, with a final run-off competition of nation-wide proportions.

Botched Batches

By A Dam Site

ACCORDING to the Portland Cement Association's *Cement & Concrete Reference Book*, there is a sign on top of Shasta Dam which reads: "This is government property. Do not remove". The book points

out that the dam contains 6,541,000 cu. yd. of concrete with a weight of about 12,000,000 tons.

Well, we still think Uncle Sam is wise to keep an eye on his property. A 12,000,000-ton unguarded monolith would just present an interesting challenge to souvenir collectors of the present era.

Blind Alley

IN an all-out effort to make the members of the National Ready Mixed Concrete Association feel perfectly at home during one of their conventions in Chicago, The Conrad Hilton Hotel created a special cocktail called "The Pulverizer." We had some difficulty in seeing any connection between the name of the cocktail and the ready-mixed-concrete industry; after drinking six or seven of the things we had some difficulty in seeing *anything*.

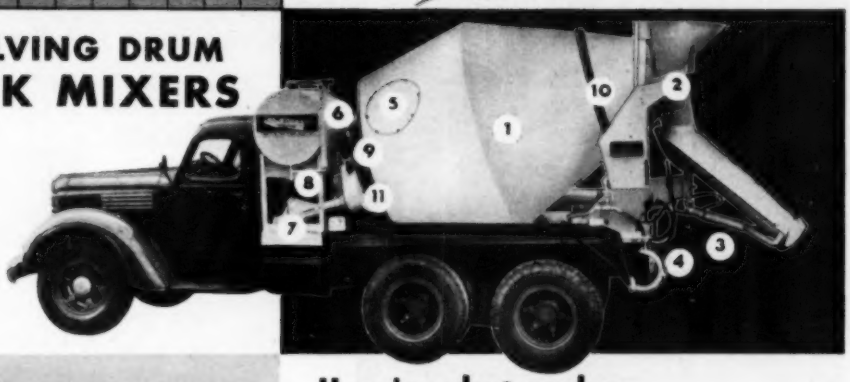
Labor Pains

ABOUT $200 worth of ready-mixed concrete was poured into a city dump at Terre Haute, Ind., when pickets prevented several truck mixers from entering the construction site for which the material was destined. Any way you look at it, it's a strange world. Truck designers work like blazes to produce equipment that can go through hell and high water, and then a couple of Joes with a grievance can nullify their entire effort just by waving picket signs.

More volume per day–
More profit per year

with The new ROCKET

REVOLVING DRUM
TRUCK MIXERS



1. *Lightweight truck mixer. All major wear points made with abrasion-resistant Cor-Ten steel.*
2. *Unobstructed, unrestricted hopper. Chute is deep cut for fast discharge.*
3. *Hydraulic control automatically raises and lowers chute. No man-handling.*
4. *Operating controls grouped for ease of operation, controlled discharge.*
5. *Removable inspection hatch with leak-proof gasket. Easy to open and close.*
6. *Constant application of flexible power by positive chain drive. Not affected by road shock, twisting of truck.*
7. *Standard Ford parts in reduction unit, proved by years of operation. Service and repair parts available everywhere.*
8. *Powerful Ford engine and truck-type transmission. Alternate drive optional. Service available throughout U. S. A.*
9. *Dished head reinforced with ⅛" bulkhead at points of maximum wear.*
10. *Three-point suspension. One-piece cast steel, precision machined ring.*
11. *Heavy front drum mounting. Main bearing is self-aligning, radial type.*

Here's what makes the ROCKET your best buy!

You get more for your money in every way when you invest in the new ROCKET truck mixer. You save on initial cost—the ROCKET sells for less because it goes direct from factory to you, eliminating the middleman and passing his profits to you as savings. The strong, lightweight ROCKET uses a small truck, enabling you to release the capital saved for other purposes. And because of this light weight, you can haul a maximum amount of concrete without exceeding state weight limits, and cut time in transit, too!

It's also a time-saver at the batching plant, due to its fast-charging action. The men-on-the-job like it especially for the new hydraulic chute control, which eliminates man-handling of the discharge chute. Controls are grouped conveniently at rear, saving steps. The ROCKET *always* delivers a homogeneous mix, eliminating segregation. As your ROCKET delivers years of dependable service, you'll see why we say: "*Feature for feature, you can't find a better buy than the new* ROCKET!"

And for Visible Mixing Action the famous

stationary drum truck mixer!

Demand the Badge of Dependability!

MAIL THIS COUPON TODAY!

Concrete Transport Mixer Co.

4989 Fyler Ave.• St. Louis 9, Mo.• FLanders 7800

CONCRETE TRANSPORT MIXER CO.

Send me complete information on the new ROCKET and

☐ Hi-Lo Truck Mixers ☐ Transport Truck Mixers
☐ Batching Equipment ☐ Water Meters

NAME.....

FIRM.....

ADDRESS.....

CITY..... STATE.....

Built to give years and years of sturdy, dependable service!

CONCRETE BLOCK RACKS AND PALLETS

Builders sturdy steel concrete block racks are built stronger and more solidly for longer-lasting service. They are specially coated with a corrosion-resistant paint. Available for front or side pick up . . . in sizes to fit your specific requirements. Easy to assemble, shipped knocked down for economy in handling and lower freight costs. Write for information and prompt quotation.

Most complete line of Plain Steel Pallets...

Made for your own size cement block machines. Guaranteed flat, square and true... no excess burrs! Complete range of sizes available. Get the best! Order today!

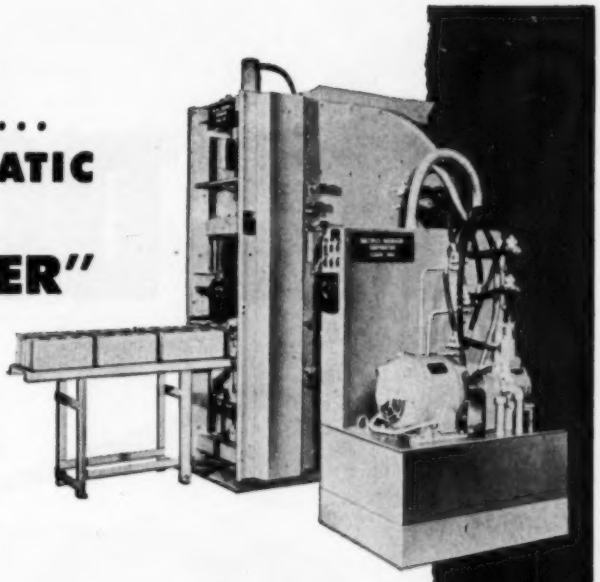
BUILDERS STRUCTURAL STEEL CORPORATION

Complete Steel Warehouse Service
Fabrication · Erection

2912 EAST 34th STREET • CLEVELAND 15, OHIO • PHONE: VUlcan 3-8300

For fast production of low-cost quality block . . .

BUY AN AUTOMATIC MULTICO "BLOCKMASTER"

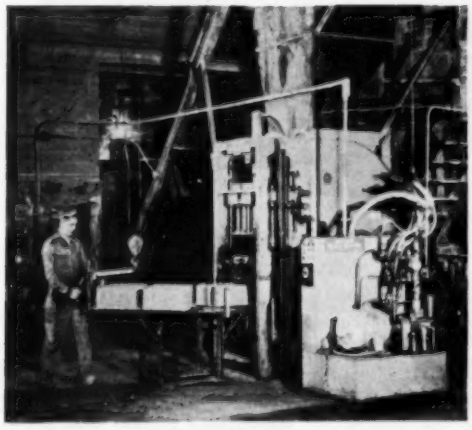


Multico BLOCKMASTER installations will pay for themselves in an average of 18 months. These durable, dependable block machines make even a small plant competitive because they mass produce all sizes and shapes of low-cost quality block. All operations except off-bearing are fully automatic and are variable to meet production needs. Install a Multico BLOCKMASTER and eliminate production bottlenecks in peak seasons.

Multico field engineers will be glad to discuss your problems and to make recommendations without obligation. Over 45 years of on-the-job experience in the industry assure you of top quality equipment and service.

Check these Features!

- LOW INITIAL COST
- MINIMUM MAINTENANCE
- FULLY AUTOMATIC
- MAKES ALL SIZES AND SHAPES
- HANDLES ANY AGGREGATE
- TAMPS UNDER POWER VIBRATION
- PERMITS QUICK MOLD BOX CHANGES
- SMOOTH, POWERFUL HYDRAULIC OPERATION
- SEPARATE POWER AND CONTROL UNIT
- AVAILABLE IN 2 and 3-BLOCK MODELS



Another Profitable "Blockmaster" Plant

This Model 2 machine is operating at 3½ to 4½ cycles per minute at the LORAIN CRYSTAL ICE COMPANY, Lorain, Ohio. John P. Kacak, Manager, reports, "The Multico machine makes good block on a production basis. It has been a profitable investment and has kept us competitive in price and quality."

WRITE FOR BULLETIN FOR ADDITIONAL DETAILS.

1960-MM

MULTIPLEX MACHINERY CO.
DIVISION OF MULTIPACK, INC.
104 FREMONT STREET ELMORE, OHIO

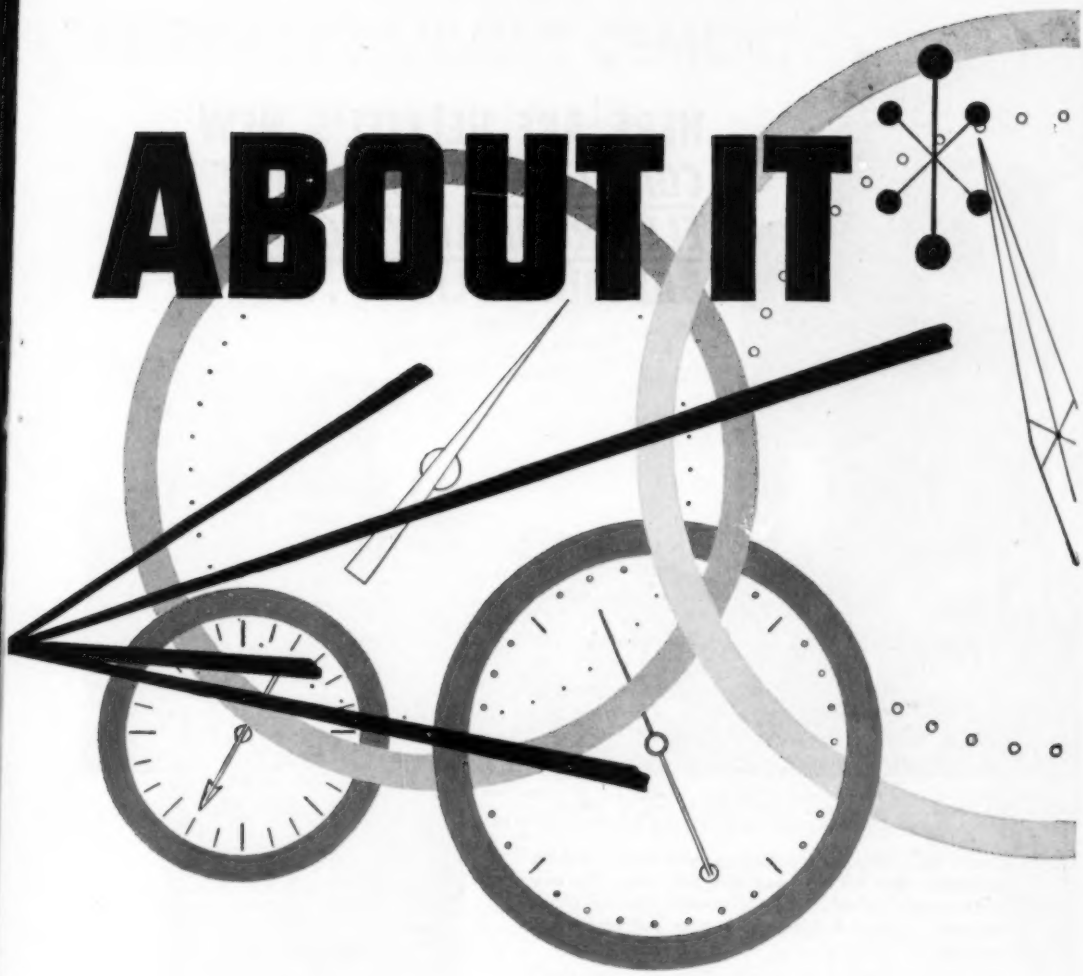
MANUFACTURERS OF BLOCK MACHINES • MIXERS • SKIP HOISTS • STRIPPERS • ELEVATORS

NO DOUBT

CHAIN BELT REX COMPANY®

adjusta-wate moto-mixers®

ABOUT IT



LOWEST WEIGHT

Yes, every possible ounce of *unneeded* weight has been taken out of Rex Adjusta-Wate® Moto-Mixers.® You can be *sure* because only Chain Belt Company uses *electronic strain gauges* to test every part of a Rex Moto-Mixer. Every part is just the right weight for the job it has to do . . . *not* too heavy, *not* too light! You're sure that Rex is the lowest weight that it can possibly be and still assure lowest operating and maintenance costs.

BIGGEST LEGAL PAYLOADS

You can be equally *sure* that the Rex Adjusta-Wate design takes full advantage of the weight laws in any state. You have true flexibility in mounting . . . can mount a Rex on the truck of your choice for biggest legal payloads and still have . . . *shortest wheelbase . . . ample rear wheel clearance for proper discharging . . . best possible over-all weight distribution on the truck.* PROOF . . . just ask the operator who has Rex Adjusta-Wate!

Ask your Rex Distributor to give you the complete facts on the Electronic Strain Gauge Tests and the Rex Adjusta-Wate Design. Chain Belt Company, 4782 W. Greenfield Ave., Milwaukee 1, Wis.

HERE ARE HELTZEL'S NEW *COMPLETELY AUTOMATIC ELECTRONICALLY CONTROLLED* BATCHING PLANTS...

Two new Heltzel Batching Plants at work on the Ohio Turnpike. Built to conform with Ohio Turnpike Commission specifications, the Cement Plant (left) has a 400 bbl. capacity with a 375 bbl. recirculator. Three-compartment aggregate Plant (right) holds up to 200 tons.

Here's real news for contractors who want batching equipment that will do more with less labor. The new electronically actuated fully automatic Heltzel plants designed for road builders, truck mixer and central mix operations.

Push button operated by one man these job-tested plants will batch up to 250 yards of perfectly proportioned batches per hour . . . with 29 separate batch combinations immediately available to the operator. Each batch, time and amount electrically recorded for easy daily tabulation.

Portable, the plants were designed for quick set-up and knock-down, easy over-the-road handling. For permanent installation Heltzel's combination cement-aggregate plant would be used instead of two separate plants.

For additional information write or call **The Heltzel Steel Form and Iron Co., Warren, Ohio,** and ask for Bulletin O-21.

Push button panel with recording equipment. Each of the 29 batch selection buttons controls a completely different mix. Panel will be wired to suit your individual requirements. Recording equipment optional.

— Naturally It's A Heltzel Flex-Plane *Product —*

LEHIGH EARLY STRENGTH AIR-ENTRAINING CEMENT

"helps us maintain our reputation for quality blocks"

PHONE 2-1611

JOLIET CONCRETE PRODUCTS COMPANY
Concrete and Waylite Blocks, Building Materials
808 ROWELL AVENUE
JOLIET, ILL.

March 11, 1953

Lehigh Portland Cement Company,
Chicago, Illinois

Gentlemen:

Lehigh Early Strength Air-Entraining Cement (Type IIIA) has been used for the production of concrete and waylite blocks in our plant for more than a year.

We find that, by using Type IIIA cement and steam curing the blocks for six hours, we can stock pile the next day and have little fear of cracking or breaking them. Our machine makes nine hundred blocks per hour. This, added to the advantage of speed in curing, enabled us to keep up with deliveries during the "rush" season last summer. Type IIIA cement also helped us produce denser blocks with sharper corners and maintain an average test at 1300 lbs. psi in 28 days. We use forty lbs. less Type IIIA cement per batch than other cements and have noticed far fewer "culls" at our machine.

In the past year, we used approximately 10,500 barrels of Type IIIA cement and have put it to every test we can conceive. We feel that the little extra we pay for Type IIIA is more than offset by its many advantages.

Type IIIA has helped us maintain our reputation for quality blocks. We are proud to add our name to the long list of concrete products manufacturers who say, "Type IIIA does a good job for us."

Yours very truly,

Joliet Concrete Products Company

Ray Thorn.

LEHIGH CEMENTS

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA. • CHICAGO, ILL. • SPOKANE, WASH.

LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT • LEHIGH AIR-ENTRAINING CEMENTS • LEHIGH MORTAR CEMENT

One Good SMITH-MOBILE Deserves Another
38 truck-mixers operating out of this large Western ready-mix plant . . . and every unit is a SMITH-MOBILE.

You'll Find it Pays to STAY with SMITH!

Owners of Smith-Mobile Truck Mixers invariably come back for more Smith-Mobiles. Why? Because they are thoroughly satisfied with the performance of their machines. They KNOW from their own practical experience that Smith-Mobiles have longer life, lower maintenance costs and LESS DOWN TIME . . . that Smith-Mobiles are designed to DELIVER MORE YARDS PER YEAR . . . give you MORE "TAKE HOME" DOLLARS. Beyond this, they know that Smith-Mobiles are backed by the world's leading concrete mixer manufacturer. So it's no wonder you see so many fleets of Smith-Mobiles in every section of the country. Once a Smith-Mobile owner . . . always a Smith-Mobile owner. You'll find it pays to stay with Smith.

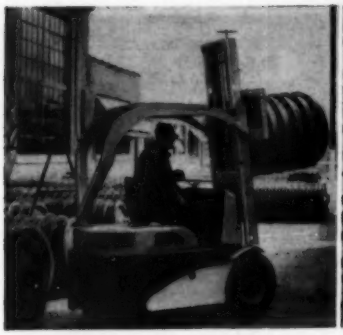
THE T. L. SMITH COMPANY
2887 North 32nd Street • Milwaukee 45, Wisconsin, U. S. A.
Affiliated with ESSICK MANUFACTURING CO., Los Angeles, Calif.

SMITH
THE T. L. SMITH CO. MILWAUKEE U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . LOOK TO SMITH

A 7469



This Hyster YT-40 is equipped with a ram attachment to handle five railroad car wheels at one time.

Your yard becomes easily accessible storage space with the YT-40. *This is profitable use* of outdoor space!

The Hyster YT-40 is easily maneuverable in close quarters...often in places where hand trucks had been used.

If I had to get along with only one lift truck...I'd choose the HYSTER YT-40

ON PNEUMATIC TIRES • 4000 LBS. CAPACITY

IT GETS MORE JOBS DONE IN MORE PLACES!

And here's why: It's *rugged* and *fast enough* to get *big* outside jobs done in a hurry—yet it's *small* enough to drive easily through crowded quarters indoors. Because it has *big* pneumatic *tires* it can get over the rough spots without spilling my load—also these big tires give plenty of *traction* for pulling through mud and snow. The YT-40 is mighty easy on floors—and it *doesn't wear us out* either! What's more, I've seen a YT-40 work *around the clock*, for *months* with a minimum of attention, other than refueling. If you have to get along with only *one* truck to do all your work *inside* and *out*—you couldn't make a better choice than the Hyster YT-40!

There are many other reasons why the YT-40 is one of industry's most popular lift trucks! But why not let your own Hyster Dealer tell you the whole story? Or you can write for Catalog 1016 to:

HYSTER COMPANY

2926 N. E. Clackamas St.
Portland 8, Oregon

1026 Myers St.
Danville, Illinois

THERE'S PROFIT IN HYSTER POWER

HYSTER

Be Sure to Call HYSTER Before You Buy ANY Lift Truck!

HYSTER COMPANY • FOUR FACTORIES: PORTLAND, OREGON • DANVILLE, ILLINOIS • PEORIA, ILLINOIS • NIJMEGEN, THE NETHERLANDS

Distributor Wanted

Aggressive thirty year old Milwaukee firm seeks established distributor to handle complete line of admixtures, cement paints, and waterproofing materials. Products sold to and thru Concrete Products Plants, Ready-Mix Plants, Contractors, and Building Materials Dealers. This is a solid, long term proposition for the right party. Full support given. Excellent opportunity with exclusive territories available.

Write qualifications, territory covered, other lines handled, personal and financial references to Sales Manager, 2225 North Humboldt, Milwaukee, Wisconsin.

UNBREAKABLE
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

MAQUINARIA y MOLDES
para fabricación de bloques y tubos de concreto

PIDA CATALOGO
Y PRESUPUESTOS

GEORGE W. HOFFMANN CO.
P. O. Box 452, Sioux City, Iowa, U.S.A.

WANTED: Septic tanks that need cleaning!

BIONETIC is a safe, sure, economical method.

Cleans sewage solids from tank
Eliminates odors
Cleans tile fields, prevents plugging
Cleans grease traps
Harmless to humans, and plumbing

BIONETIC at $4.25 per pound, or case of 12 one pound containers $48.00, 25 pound drum $3.25 pound.

Advisory Service, write us.

RELIANCE CHEMICALS CORPORATION
P.O. Box 6724, Dept. PQ Houston 5, Texas

WANTED

Six sections Manganese steel for 16" x 16" New Holland roll crusher. Sections may be plain or corrugated.

HUD-CIN BUILDING PRODUCTS
700 NORTH AVENUE WESTFIELD, N. J.

WANTED

A large established New Jersey Concrete Concern has an opportunity for a concrete Engineer or Technician who is thoroughly experienced with ready mixed concrete.

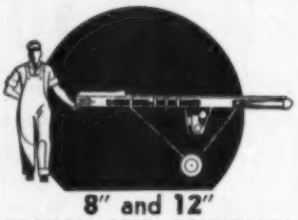
Box No. DM-50 c/o CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Complete Concrete Pipe Plant Equipment
(1) Concrete pipe machine—12"-72" diameter
(2) Besser Mixer
(3) Besser Skip Loader
(4) Wire Roller
(5) Boiler, etc.

Guaranteed A-1 Condition.

Box No. GQ-80, c/o Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.



8" and 12"
TROUGH BELT CONVEYORS
Sand • Gravel • Rodi-Mix
Basement Excavating
18' - 24' - 30'
$444 to $770
Gas or Electric Drive
Send for Literature
New London Engineering Co
NEW LONDON • WISCONSIN

WANTED

1500 used 8 inch pressed steel pallets, 45% air space, 3 oval core (preferable not modular), mail tracing to:

A. BASLE
100 N. Main Street Washington, Pa.

STOP *that* WATER
With FORMULA NO. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

FOR SALE — LIKE NEW

2—Appley-Yellen Hi-Speed Block Machines.
Factory rebuilt to use plain pallets.

JOHN J. YELLEN
Perth Amboy, N. J.

FOR SALE

2500 Steel Pallets 8-8-16

JESTIN C. SMITH
P.O. Box 86 South Vineland, N.J.
Phone 9—8765

FOR SALE

Jackson Church 6 Pocket Brick machine equipped with 3 direct drive motors,—in perfect condition. Reason for selling: I have sold my location.

WATKINS CEMENT BLOCK & SUPPLY CO.
G 4016 S. Saginaw Rd. Flint, Mich.
Ph. 92432

1—Ken air compressor, 200 lb. cap., with 3 HP motor
1—Besser Super K-3 block machine with 4"-8" attachments
1—40 ft. tower with conveyor & cups, 3 HP motor
70 racks, cap. 48 blocks
1—Lathe, bollingsworth 16" x 6' w/3 HP Master drive motor including all necessary tools to work with

Must be sold by July 1, 1953

HOR-CRAFT MANUFACTURING CO.
Appleton 7-6200 Bowle, Maryland

BUILD GOOD WILL

Advertising necessities for the block industry. Line Pins, Twigs, Modular Coursing Stick. Also the new Block Calculator and Wood Corner Block. All imprinted with your advertising. Complete catalog on request.

GERSON CO.
97 Deering Road Mattapan, Mass.

FOR SALE

Half interest in modern concrete block plant. Annual sales $300,000.00. Located in midwest. Steady growth. Return 25-30 per cent on invested capital. Write to

BOX NO. GQ-81
c/o CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

LOWER COST
PACKER-HEAD WINGS
[illegible] longer—yet [illegible]
TEXAS FOUNDRIES
LUFKIN, TEXAS

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

FOR SALE

25 foot, Baughman gasoline driven, screw type cement conveyor complete with loading hopper and pneumatic tires. Used less than three months.

20 cu. ft. cement weigh batcher, complete, in original crate. Priced for quick sale. Contact:

Fred Koote, Bartelso Lumber & Supply Co.
Bartelso, Illinois

FOR SALE

1—DUNBRIK brick machine & motor
1—DUNN 16 CU. FT. MIXER with skip hoist & motor
1—Mat sizing machine
21—RACKS—5050 Pallets
Miscellaneous & spares with above
All in good working order
For information WRITE

SCHUYLKILL DUNBRICK CO., INC.
North 18th St. Pottsville, Pa.

A LIFETIME OPPORTUNITY

Make $1000 monthly as easy as rolling off a log; facing building blocks in Real Stone Color & Design in your back yard. Also applying stone siding, cost only $6.00 per square, deposit for equipment only $300.00. American Natura-Stone Company, 2407 Garrison Blvd., Baltimore 16, Maryland.

FOR SALE

ROOF SLAB FORMS (used)
CHANNEL TYPE
with accessories

E. E. AUSTIN & SON
1919 Reed St., Erie, Pa.
Phone 47-147

BARGAIN DAY, TODAY!

SWAP • SELL • TRADE

4	No. 9 STEARNS Joltcretes	$140.00 ea.
2	No. 7 STEARNS Joltcretes	$750.00 ea.
1	28 cu. ft. STEARNS Mixer	$950.00
1	28 cu. ft. STEARNS Skip Loader	$950.00
2	18 cu. ft. STEARNS Concrete Mixer	$650.00 ea.
1	18 cu. ft. STEARNS Skip Loader	$400.00
2	12 cu. ft. STEARNS Concrete Mixers	$300.00 ea.
40	Racks for STEARNS No. 9, for use with spade type Off Bearer	$ 22.00 ea.
100	Hinge type racks	$ 15.00 ea.

1000's of PALLETS IN STOCK

Send tracing or sample for quotation

WRITE
WIRE
PHONE

GENERAL ENGINES CO.

307 Hunter St., Gloucester, N.J., Phone: Gloucester 6-1337

CEMENT COLORS

All shades and grades the highest quality.

Write for color cards, prices and samples

RICKETSON MINERAL COLOR WORKS
MILWAUKEE 2, WISCONSIN
Established 1885

FOR SALE

Large block plant in small southeastern town. Leased Besser equipment. Sales last year over two million block. Priced for quick sale $125,000.00 cash plus inventory.

BOX NO. GQ-86
c/o The Concrete Manufacturer
431 South Dearborn St. Chicago 5, Illinois

CENTRAL MIXER

Practically new C.M.C. One yard stationary mixer. With 20 HP electric motor & hopper. Bargain Price.

OSBORNE EQUIPMENT COMPANY
Knoxville, Tennessee
Phone 5-1177

1—Godfrey Portable Track Conveyor
1—Bonded 14" Corrugated 2-Roll Crusher
1—18" Belt, 40' Port. Conveyor, completely motorized
1—Dings 2-Roll Magnetic Separator
1—Bonded Vibrating Screen
1—18" Belt, 55' Portable Conveyor
All motors, controls, switches Included.

A complete sinter crushing and screening plant for sale at a very low price. This equipment is practically new.

BOX NO. GQ-85, c/o Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Stearns Model C Clipper Stripper, 12' Mixer, 18' Skip Hoist, 1000 Cast Iron Pallets. Any reasonable offer considered.

BOX NO. GQ-88,
The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Stearns Clipper, pallets, racks, Mixer (if desired), all in perfect condition. Low price.

Call Portland 3081 or write

PORTLAND CONCRETE SUPPLY & BLOCK CO.
PORTLAND, MICHIGAN

MODERN BLOCK PLANT FOR LEASE

STEARNS JOLTCRETE #9 MACHINE WITH OVERHEAD MIXER AND BINS. LVRR SIDING. LARGE STEAM ROOMS AND AMPLE YARD SPACE. CAN BE SEEN IN PRODUCTION.

HERCULITE BLOCK & SUPPLY CO.
180 Colt Street Irvington, New Jersey

FOR SALE
BARGAIN

1—New Holland 30CV type—Pick up vertical elevator—8" buckets—35' long. Complete with motors and vibrating screen.

PURCHASE PRICE: $1500.00
Sale Price: 500.00

2—WHF Hydraulic footlift trucks, with platform 24" x 72", 11" from ground in lowered position with 4" lift—rubber tired wheels and sealed ball bearings.

SALE PRICE: $500.00

Steel Curing Racks

Sale Price: $10.00 ea.

All machinery and equipment in excellent condition. Used about 18 months.

LANERI BROS. CO.
6202 Avenue U Brooklyn 34, N. Y.

FOR SALE

2—Jackson and Church Autoclaves, 50' x 8', Bolted Head
1—Jackson and Church Autoclave, 58' x 6½', quick acting head
1—200 HP., 150 lb. Superior Steam Generator Package Unit. New in '51
2—Jackson and Church 12-pocket Brick Machines
1—3' x 8' Hardinge Rod Mill
1—4' x 10' Jackson and Church Rod Mill
1—125 HP. Stoker Fired Fire Tube Boiler
1—Spencer Vacuum Producer for Air Conveying
Bins, Hoppers
Motors, 1—50 HP., some gear heads
Speed Reducers, Horizontal and Vertical, ½ HP.—25 HP.

GICHNER BUILDING AND SUPPLY CO., INC.
Bowie, Maryland Tel.: Union 4-7579

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

FOR SALE

Vibrapac. About 7 yrs. old and in very good condition. Has been steam cleaned and painted. Available immediately. Price—$18,000.

DeClerk Industries, Inc., 6497 East 10-Mile Rd., Centerline, Michigan.

---

1. One Bucket elevator for aggregate manufactured by Columbus Conveyor Co. Purchased new July 1952 and never erected. NEVER USED.

   Length C-C 51' v 6½"
   Capacity—100 tons per hour
   Motor Electric, 15 H.P., 3-Phase, 220-240 V
   Buckets 14" x 7" Spaced 16"
   Conveyor belt 112' - 4" - 16" 7 ply
   With boot and sprout
   Cost new $3871.00

2. One Butler No. 7 track plant No. E 1370. This track plant is for unloading bulk cement at railroad siding and loading into bulk trucks.

   Track screw 10" x 17' - 3⅝"
   Cement elevator capacity 230-260 bbls. per hour
   Overall height 25' - 5"
   Height discharge sprocket 12' - 0"
   Powered by LeRoy H.P. gas engine Model XP 30
   Purchased new October 1, 1952 for $3736.00

   This plant purchased new—never erected and NEVER USED.

3. One Littleford steam generator for heating aggregate.

   Model 1000 E, Electric motor
   Maximum W.P. 300
   H.S. B 8794 H.S. 91 sq. ft.
   With 300 gal. fuel oil tank.

   Purchased new Jan. 20, 1953. Worked less than 150 hours. Cost $2950.00.

4. One—400 bbl. one-compartment auxiliary, ground storage bin—Blaw Knox. This bin purchased new July 1952 at cost of $2945.00.

5. One Barber-Greene portable belt conveyor:

   50 feet long
   24" belt
   Wisconsin gasoline motor
   16 feet of extra new belt
   In perfect working condition.

HOWAT CONCRETE CO., INC.

South Capitol at S Street
Washington 4, D.C.

FOR SALE

Stearns No. 9 Joltcrete, power carriage, air operated offbearer, 4" and 8" attachments with pallets. Priced very low.

Also many Zonal, Baba and Baton P.S. Pallets and 7¾" 50% cast iron pallets.

Guy D. Moody

Box 852 Bristol, Va.

For Sale

Having sold my location, am forced to sell No. 9 Joltcrete Block Machine equipped with 8x8x16 mold box and 4x8x16 box for 4" high blocks. This machine was completely rebuilt last Jan. at Stearns Manufacturing Co. and is in perfect condition. Also 2 Stearns 28 ft. mixers; one is self propelled.

Watkins Cement Block & Supply Company
G 4018 S. Saginaw Rd. Flint, Mich.
Phone 92432

The difference between Life... and Death...

"Why should you give blood? Ask me—I ought to know. I fought in Korea. But since then I've been through the biggest battle of all—the battle for life itself. And it was blood—and blood alone—that saved me. Don't know when I'll be in a position to start repaying my debt by giving some blood of my own. But I will—some day. You can count on it!"

All kinds of people give blood—for all kinds of reasons. But every reason for giving blood is a *special* reason . . . just as every American life that can be saved at any time and at any place . . . is special. So whatever *your* reason for giving blood, this you can be sure of: Whether it goes to a combat area, a local hospital, or for Civil Defense needs—this priceless, painless gift will some day save an American life!

Give Blood Now

CALL YOUR RED CROSS TODAY!

NATIONAL BLOOD PROGRAM

Business Executives!

✓Check These Questions!

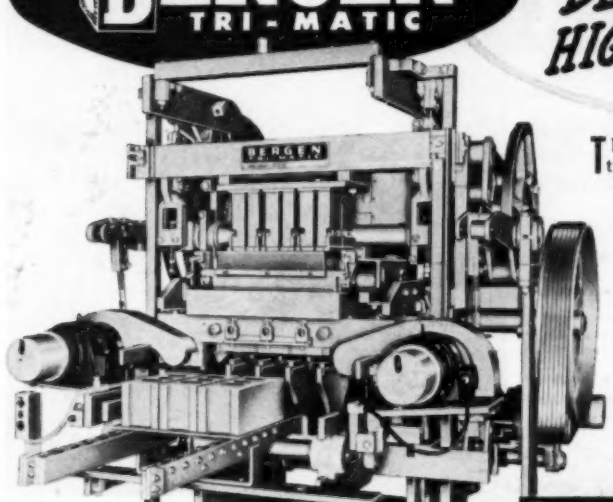
If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ☐ Have you given your employees time off to make blood donations?
- ☐ Has your company given any recognition to donors?
- ☐ Do you have a Blood Donor Honor Roll in your company?
- ☐ Have you arranged to have a Bloodmobile make regular visits?
- ☐ Has your management endorsed the local Blood Donor Program?
- ☐ Have you informed employees of your company's plan of co-operation?
- ☐ Was this information given through Plant Bulletin or House Magazine?
- ☐ Have you conducted a Donor Pledge Campaign in your company?
- ☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?

Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

THE BERGEN TRI-MATIC

..a RUGGED, DEPENDABLE, HIGH PRODUCTION BLOCK MACHINE



These BERGEN TRI-MATIC "Built-in" features are designed for long, hard service:

- Outrigger bearing support
- Quick-change cut-off device
- High speed cam designs
- Quick-change agitator grid device
- Roller-bearing rollers
- Slow-moving chain with 3 lug links
- Bronze guide liners
- Eccentric link with roller bearing
- Quick-change split sprockets
- Agitator back shaft with roller bearings

Write for additional information or —

Phone us "COLLECT" . . . NUtley 2-7300

BERGEN MACHINE & TOOL CO., INC.

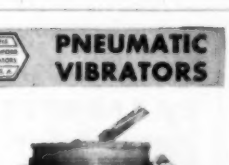
189 FRANKLIN AVE., NUTLEY, N. J.

"BRANFORD" PNEUMATIC VIBRATORS

You can produce

CONCRETE PRODUCTS

of great strength,



density and smoothness with

"BRANFORD" AIR VIBRATORS

Shown here is one of several types of "BRANFORD" portable Concrete Form Vibrators, available in a wide range of sizes. Other types for permanent vibrator installations can be supplied. One of the valuable features of "BRANFORD" Vibrating Equipment for concrete work is its VARIABLE SPEED. Low air consumption, high foot-pound impact and instant starting are other desirable qualities.

Write or call us for a survey and recommendations on your vibrator requirements. Catalog No. 48 on request.

THE BRANFORD COMPANY *continuing the*

New Haven **VIBRATOR COMPANY**

165 CHESTNUT STREET, NEW HAVEN, CONN.

Flexible

MARIETTA AIR-CELL SILOS

Marietta's complete range of size and adaptability to any materials handling system for present and future plans makes it the most flexible storage system available.

Exclusive Marietta Air-Cell stave construction combines great strength with a high degree of insulation and provides a completely moisture-proof silo.

Safe Marietta storage lets you buy bulk materials in the best way . . . in proper quantities . . . store them over longer periods . . . and handle materials stored profitably.

Write today for complete information.

The MARIETTA CONCRETE Corp.

MARIETTA, OHIO

Branch Offices: 501 Fifth Ave., New York 17, N.Y.
805 Bessemer Bldg., Pittsburgh 22, Pa.
Pulaski Hwy. at Race Rd., Baltimore 21, Md.

MARIETTA AIR-CELL STAVE

Improve Material Handling with
BAUGHMAN Hi-Speed job-fitted CONVEYORS

There's a low-cost, Hi-Speed, better-built BAUGHMAN for every contracting need—belt-and-bucket, (Models 175 and 220), troughed belt (Model 230), or screw-type (Model Q-51). Before you buy any portable or stationary conveyor, let your distributor demonstrate BAUGHMAN'S years-ahead features—or write for full details.

BAUGHMAN builds them BETTER!

- All-welded ALLOY STEEL construction—17% stronger, 30% lighter, 5 times more rust-resistant
- Splined, lifetime-lubricated universal joints and shaft connections
- Extra-rugged construction where it counts

Model TST-10 Bulk Material Transport Body. To haul cement or other dry powdered material. Completely self-unloading by Twin Auger Discharge. Write for complete literature.

There's a Baughman Distributor Near You!

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.
126 Arch Street • Jerseyville, Ill.

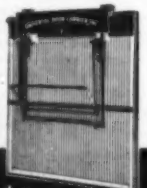
↑ *Universal equipment, Reimers-Kaufman Concrete Products Co., Lincoln, Neb*

CAN *cut your costs per block—and improve your quality-uniformity*

Block plants the country over are reducing the cost of curing and stepping up quality-uniformity by installing modern, efficient, kiln closure equipment. They have found it *stops costly losses of heat and steam* and helps *achieve uniform curing conditions.* Why not investigate—

Universal

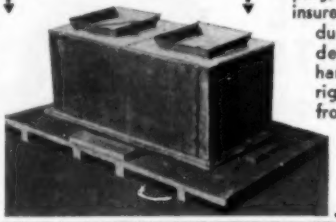
fully insulated, all-metal DOORS *and world-famous* DOOR CARRIERS



WRITE, WIRE, OR PHONE:

UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Ind.

QUALITY SEPTIC TANK
built with
CARPENTER
Forms and Equipment



Here's a pointer to better business for concrete producers! CARPENTER Equipment speeds up pouring, stripping, and resetting, and insures economical production of units in wide demand. ***One man*** handles our delivery rig! Satisfied customers from coast to coast.

Write for details
CARPENTER MFG. CO.
Phone 28938
R.F.D. No. 1,
Box 470
RICHMOND 23, VA.

NOW MORE THAN 140 LICENSED MANUFACTURERS *Producing*

Patented
homeward
Concrete **STEPS**

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write
ROGER F. WILLIAMS, Licensor
3420 S. W. 9th St. Des Moines (15), Ia.

Three Ways to Insure Extra Profits through Increased Block Production

OSWALT'S COMPLETE SERVICE

1. Shock-Free Block Ejector and Front Pallet Feeder
2. New Simplified Height and Density Control
3. Improved Vibration and Machine Changes

Many satisfied customers operating scores of machines.

Write for name of Oswalt-Serviced plant nearest you.

BETTER BLOCKS for VIBRAPAC OWNERS

NEW SHOCK-FREE BLOCK EJECTOR and FRONT PALLET FEEDER

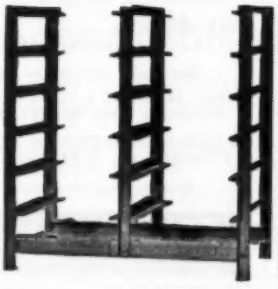
The smooth, gentle motion in block delivery from mold to pallet eliminates green cracking. Culls are reduced to a minimum. The higher percentage of good blocks means more profitable production.

Correct, uniform height of blocks is easily maintained by automatic controls on the vibrating motors. The adjustment of a special timer insures constant density. A signal system enables operator to regulate feed so as to compensate for variations in mix.
All these added features of Oswalt Service are designed to handle any block production up to speeds of 1080 units or more per hour . . . without sacrifice of quality . . . or the cracking of green blocks.

Full Details in New Bulletin ➡ **OSWALT ENGINEERING SERVICE CORP.**
1335 Circle Avenue, Forest Park, Illinois • Phones: ESterbrook 8-3666 — FOrest 6-3898

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN
- *DURABILITY*
- *ECONOMY*
- *EFFICIENCY*

Sturdy construction
•
any style or capacity
•
Shipped knocked down
•
Rigid Field connections
•
assembled Easily

CHASE Foundry & Mfg. Co.
2400 Parsons Ave., Columbus 7, Ohio

CUT GLOVE COSTS 40% to 70% in concrete products plants

for coarse cinder block, bagged cement, other sharp or slippery materials

Grab-it gloves, palm-coated with tough, rough-textured natural rubber, have positive non-slip grip and best resistance to sharp-cutting materials. Outwear ordinary canvas gloves up to 10 times. Choice of knit-wrist, elastic wrist, band top or safety cuff styles.

for handling most concrete products and greased pallets

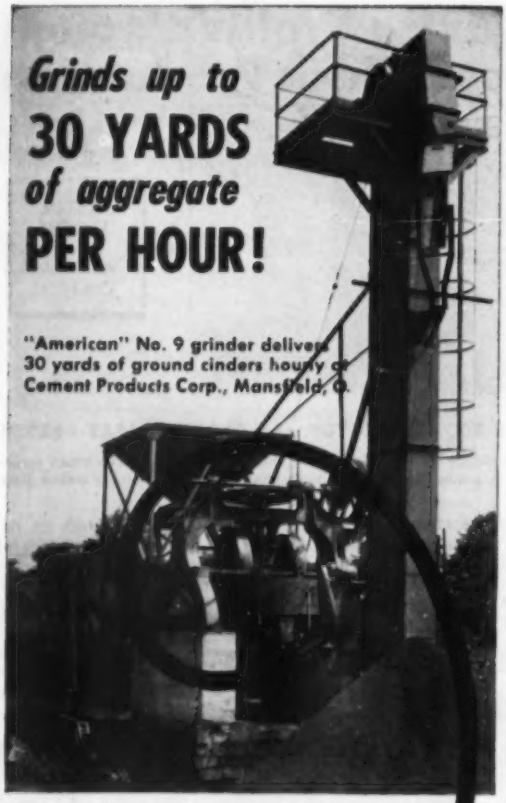
Monkey-Grip gloves, coated with permanently flexible plastic, are specially resistant to abrasion and grease. New wing thumb and curved, *pre-flexed* fingers fit the hand all over. Far outwear ordinary plastic gloves. Six fully coated or palm coated styles.

Free Test Offer: Employers, send brief description, on business letterhead, of your operation and materials handled. Without charge, we will forward samples of the gloves we recommend, for on-the-job test. Address

Edmont Manufacturing Company
1208 Walnut St., Coshocton, Ohio
World's largest maker of coated industrial gloves

Edmont JOB-FITTED **GLOVES**

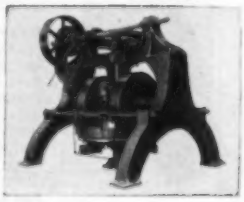
Grinds up to
30 YARDS
of aggregate
PER HOUR!



"American" No. 9 grinder delivers 30 yards of ground cinders hourly at Cement Products Corp., Mansfield, O.

HERE'S WHY AN *American* GRINDER IS THE *RIGHT* GRINDER FOR YOUR PLANT . . .

- Needs no screen plates
- Handles material wet or dry
- Adjustable to your volume and size requirements
- Requires only minimum maintenance
- Has low power consumption
- Good for years of trouble-free operation



YOU CAN'T BEAT AN "AMERICAN" FOR GRINDING

- **CINDERS**
- **HAYDITE**
- **PUMICE**
- **SLAG**

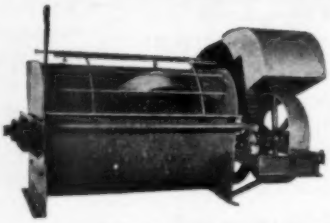
and a wide range of quarry and mine products.

If accurate grinding, in volume, poses a problem in your plant . . . ask for a non-obligating consultation with the "American" grinding specialist . . . write, wire or phone.

***American* GRINDERS**

W. A. RIDDELL CORP., BUCYRUS, OHIO

PRASCHAK MIXERS



Mfgd. in sizes 9-16-21-30 and 50 Ft.

Factory to Customer prices.

Get the most for the least!

"The Mixer that can take it"

- All Ball Bearing Equipped
- Cast "Wearhard" Spiral Blades
- Replaceable Sectional Liners
- All Welded Drum Construction
- Drive Available on Either Side

We also manufacture

Block Machines, Conveyors, Cinder Crushers, Hand and Power Lift Trucks, Fork Hi Lift Trucks, Silo Stave Equipment, Cup Elevators, Rotary Screens

PROMPT DELIVERY!

PRASCHAK MACHINE CO.

MARSHFIELD WISCONSIN

the *FORNEY Compression* TESTER

SELLS PRODUCTS INCREASES PROFITS

Nationally Distributed By

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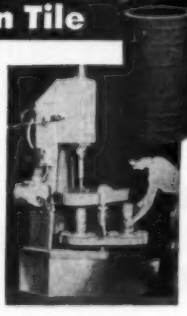
Write for Illustrated Folder.

FORNEY'S *Inc.* 203 ELM ST.
NEW CASTLE, PENNSYLVANIA

Make Money with *Champion* Cement Drain Tile



More millions of drain tile are needed to supply ever growing demand. The market is broad and profits are big.

The Champion makes the world's best drain tile. Densely compacted . . . ribbed for extra strength . . . every one truly concentric.

Champion machine is simple, compact and really rugged. Automatic feeder (optional) makes for 1-man operation. Write for literature—gives facts about the business and the equipment.

Concrete Equipment Co.
532 Ottawa Ave., Holland, Mich.

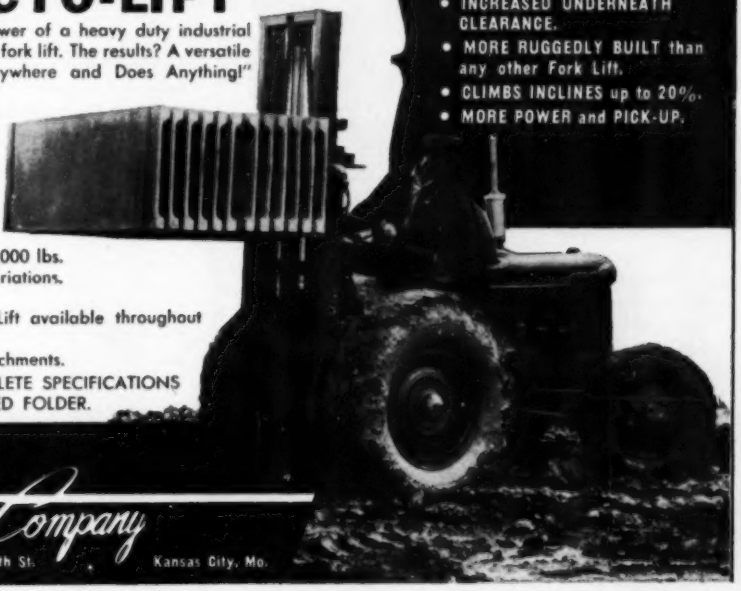
HANDLING "IN THE ROUGH"?
CHECK THESE 6 ADVANTAGES OF
TRACTO-LIFT

- MAXIMUM FLOTATION with Oversize Tractor Tires.
- GREATER TRACTION.
- INCREASED UNDERNEATH CLEARANCE.
- MORE RUGGEDLY BUILT than any other Fork Lift.
- CLIMBS INCLINES up to 20%.
- MORE POWER and PICK-UP.

TRACTO-LIFT combines the power of a heavy duty industrial tractor with the efficiency of a fork lift. The results? A versatile unit that literally "Goes Anywhere and Does Anything!" Concrete block, slabs, stone, regardless of load or the terrain Tracto-Lift can handle it faster, easier and better. Yet for all its advantages, this unit costs *less* than any other fork lift of equal size and capacity.

Lifting capacities—3,000 to 15,000 lbs.
Fork lengths—30-108" in 6" variations.
Lifting height—10' to 25'.
Parts and service for Tracto-Lift available throughout the world.
Complete line of versatile attachments.

WRITE TODAY FOR COMPLETE SPECIFICATIONS AND ILLUSTRATED FOLDER.



TRACTO-LIFT Company
800 East 18th St. Kansas City, Mo.

WIRE
WRITE
PHONE

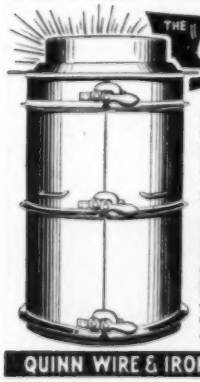
..."ELECTRO-VISOR is the Answer" to the problem of making uniform blocks

"LOOK! . . . NO HANDS!" ELECTRO-VISOR Height Maintenance eliminates the human factor in making blocks. Automatic Feed Controls insures uniform quality of block.

Equip your Vibrapak Machine with ELECTRO-VISOR and boost production to 960-1200 blocks per hour . . . pay for it out of increased profits in 6 to 8 months.

WE CAN DELIVER ELECTRO-VISOR IN TWO WEEKS

M&M ENGINEERING CORP.
1017 W. 23rd Street, Indianapolis 23, Indiana
***Phones:* Imperial 5496 - 5497**



THE "Quinn Standard"
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

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JOHNSON ELEVATOR CHAINS

- long-life carburized steel knuckles
- medium-high carbon steel side bars
- alloy heat-treated ⅝" pins
- welded bucket lugs

***All-welded* BUCKETS**

- light, durable, smooth
- fill fast, clean fast
- heavy gauge lips, ends
- cement: 10x6, 12x7, 14x8"
- agg.: 10x6, 12x8, 14x8, 16x8"

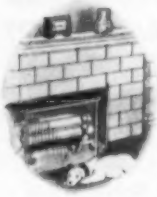
for: C. S. JOHNSON CO. Champaign, Illinois
Send information on: ☐ buckets ☐ elevator chains
NAME _____
STREET _____
CITY, STATE _____ 7342PG

Are you getting ALL the Block Sales out of each job?

When a prospect decides to use concrete block for the foundation and exterior walls of his new house don't overlook your opportunity for **extra** sales. Many producers boost volume by promoting block for additional uses in home construction.

One architectural trend, for example, is the use of concrete masonry for interior walls and partitions. Showing prospects how such walls add real beauty and charm to houses can add to your profits.

The growing popularity of concrete block joist floors affords another opportunity to build sales. Every prospect is interested in floors that can't squeak, sag or burn.



There's rustic charm in a concrete masonry fireplace. Like all block construction it can be painted any of a variety of attractive colors with portland cement paint.

Concrete masonry garages offer another market for your block. They are weather-resistant yet economical to build and often provide space for a workshop or storage room.

Also, extra sales await the producer who points out the many advantages of concrete block for:

Garden Walls • Outdoor Barbecues • Terrace Walls
Back-up for other Masonry Materials

Write for free literature on these or other uses for concrete masonry, sent only in U.S. and Canada.

PORTLAND CEMENT ASSOCIATION
Dept. A6-58, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

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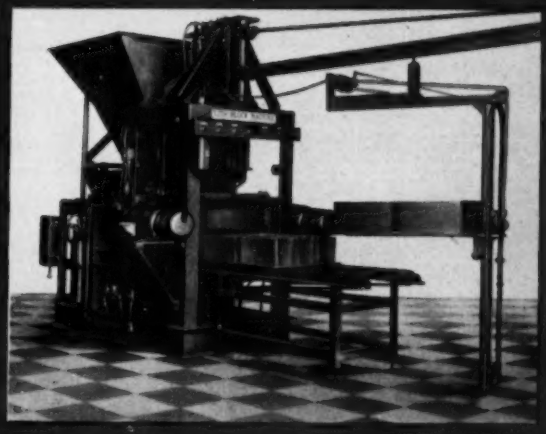
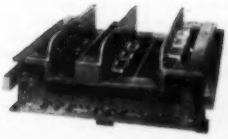
*See also Detailed Information in 1952 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

Here's your PROVEN PROFIT PICTURE!

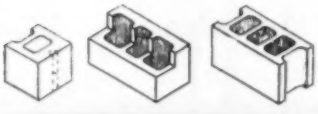


the new LITH-I-BLOCK LINE the greatest advance FOR '53



— THE EXCLUSIVE
quick-change mold box

Just remove four bolts, slide the mold box out, replace it with another mold box in which liners and cores of your next desired block unit has been installed, change strippers — and you're ready to start production in the matter of minutes. The removal and replacing of the mold box is as simple and fool-proof as your dresser drawer!

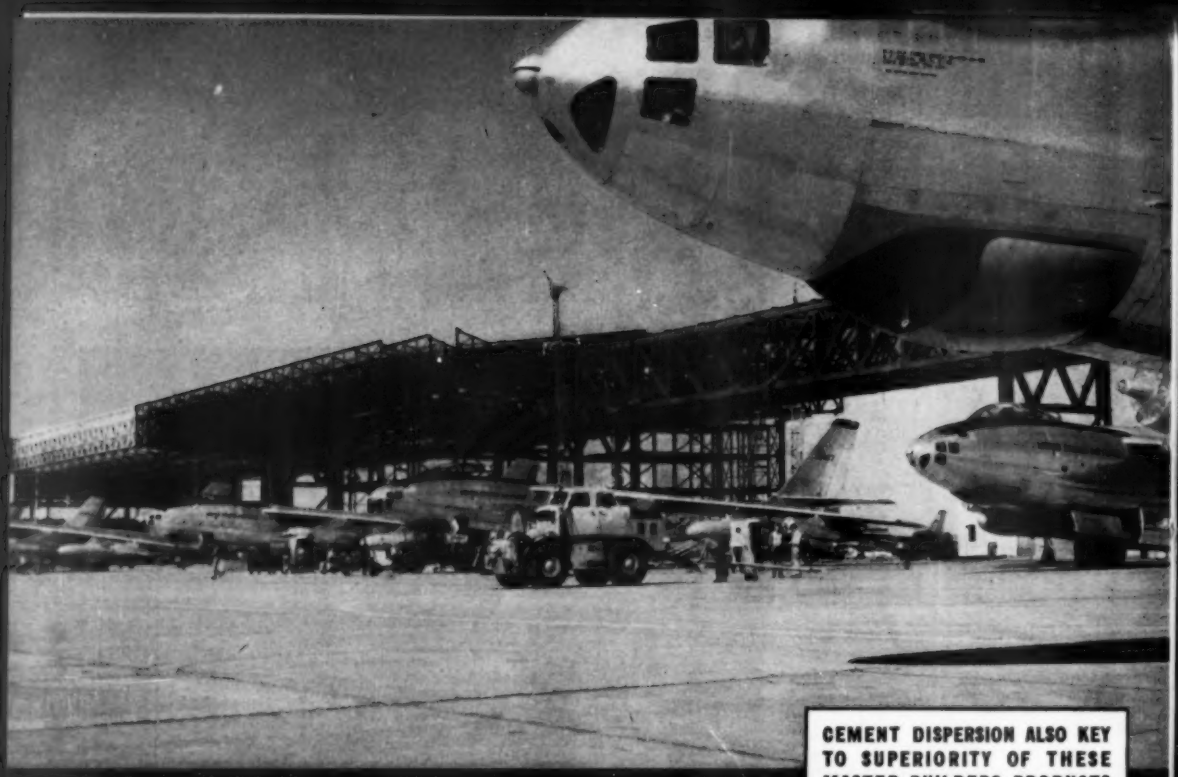


Here, in one great family of machines, you'll find the right model to exactly satisfy *your* production needs. You'll find the right combination of high production and low, low cost to deliver the famous Lith-I-Block Profit Bonus.

Lith-I-Block engineering superiority, its compact design and the superb quality of the block it produces make it the one machine that is preferred by leading block producers from coast to coast. And Lith-I-Block can put you ahead of the competition too! It will make your sales curve shoot upward because it produces better block, in greater variety at the low cost that gives you an assured profit.

Get complete information about the New Lith-I-Block for '53. Write for the name of your nearby Lith-I-Block producer and see this champion in action. Lith-I-Block performance will convince you!

LITH-I-BAR CO.
HOLLAND, MICH.



Boeing Airplane Co., Wichita, Kansas. Pozzolith Concrete used in apron and hangar Consltg. Engr.—Wilson & Co., Salina, Kansas; Hangar Contr.—Manhattan Construction Co., Inc., Muskogee, Okla.; Hangar concrete supplied by Walt Keeler Concrete Co., Wichita, Kansas; Apron Contr.—Peter Kiewit & Sons Co., Wichita, Kansas, who also produced the concrete for apron.

120,000 Cu. Yds. of Durability...

POZZOLITH CONCRETE

Low unit water content and increased durability are among the important reasons for the wide use of Pozzolith Concrete in such projects as Boeing's 4,000′ x 800′ apron and many other types of exposed concrete work.

In tests conducted by the Nation's Highest Testing Authority, using a range of cements typical of all U. S. cements, Pozzolith Concrete specimens had up to 400% greater resistance to freezing and thawing than ordinary concrete.

Pozzolith, cement dispersion, provides maximum durability — with maximum economy — because it (1) *reduces unit water content* by approximately 15% (2) entrains the optimum amount of air and (3) fully complies with the water-cement ratio law — basis of ACI and ASTM procedures of design, specification and production.

Full information on Pozzolith and "see-for-yourself" demonstration kit supplied on request . . . without cost or obligation.

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

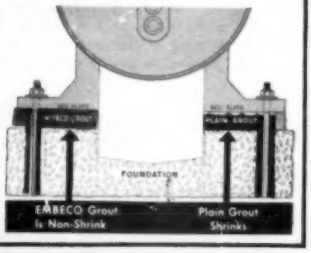
MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-safe, non-dusting and easy-to-clean. Non-colored and colored. For new floors and resurfacing.

Section of Masterplate Floor
Note Thickness of Armored Surface.

EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



the MASTER BUILDERS Co.

Subsidiary of American-Marietta Company

BROADCAST and SECTION

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ADVERTISING RATE PER ISSUE: $8 A COLUMN INCH. LOWER RATES FOR LARGER SPACE USED AND/OR ON A CONTRACT BASIS. WRITE FOR RATE CARD.

CLOSING DATE: 20th OF THE MONTH PRECEDING DATE OF PUBLICATION

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ANYWHERE
We look into the earth
PENNSYLVANIA
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Crushing Plants
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Operation
Plant Layout
Design
Construction
Appraisals

WANTED

Building a light weight Aggregate Plant. Need one 24" x 36" jaw crusher, conveyors, 7' x 120' Rotary Kiln, cyclone dust collectors, miscellaneous equipment.

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WANTED

Tractors, bulldozers, cranes, shovels, air compressors, low boys and tandem trailers. Phone, wire, or write

WEBER & CO.
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Phone 4-2622

WANTED

MACHINERY OR PLANT

Including Rotary Kilns, Direct Heat Dryers, Pulverizers, Crushers, Ball Mills, Vibrating Screens, Power Shovels and Cranes, Bucket Elevators, Conveyors, Filters, Diesel Engines.

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Royal E. Burnham

Attorney at Law

Patent and Trade-Mark Causes

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20 or 25 ton Truck Crane
30 ton Diesel Locomotive Crane
65 ton Diesel Electric Locomotive

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Girard Trust Company Bldg.
Philadelphia 2, Pa.

JOHN F. MEISSNER ENGINEERS, INC.
Consulting & Designing Engineers

CONVEYOR SYSTEMS — SCREENING PLANTS — SHIP AND RAIL LOADING
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DESIGNING MECHANICAL ENGINEER

Opportunity for experienced designing mechanical Engineer familiar with structural steel, reinforced concrete & machinery layouts to become part of the regularly employed department of old established company in Maryland. Must be capable of supervising, making & detailing layouts for crushed stone, sand & gravel plant. Replies treated confidentially. Give experience, age, schooling, references & salary in letter.

BOX NO. GQ-90, c/o PIT & QUARRY
431 S. Dearborn St., Chicago 5, Ill.

WORKS ENGINEER

For Midwest Refractory manufacturer. Must be between 35 and 45 years of age, with degree in Engineering, preferably mechanical or electrical.
Actual practical experience in handling men, supervising maintenance and construction work including rotary kilns in stone or refractory plant required.
Give details of education, experience, personal qualifications and salary required in first letter.

BOX NO. FO-70,
c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Wanted — Assistant Manager

Small well integrated open pit quarry and fine grind milling unit located in the desert section of southern California will welcome application from a man 25 to 40 with mine, civil or mechanical engineers training for the position of assistant manager. In application please give full details including experience, salary desired and availability. Attach recent photograph.

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c/o Pit and Quarry Publications
431 South Dearborn
Chicago 5, Illinois

WELL KNOWN FACTS

Advertising is, of course, the most economical way to transmit a sales message to a prospect or customer.

Advertising enables you to *contact* and *sell* all the men you would like to see. *There are no closed doors.*

It pays to advertise in —

***PIT AND QUARRY PUBLICATIONS**
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Leading publishers to the Non-metallic Minerals Industries.

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CRUSHING JOB

We wish to contact highway, airport, military and government area contractors using crushed rock. Complete portable plant and all accompanying equipment available July 1st. Capacity 1500 to 2000 tons per day. What have you?

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$500,000 LIQUIDATION

Former Maneely Chemical Div. Wheatland Tube Co., Wheatland, Pa. (near Youngstown, O.)

*New 1949 Equipment Still Installed

2—Feine 5′ x 3′ all monel string discharge filters, compete with all accessories, washing, compression and agitation mechanism.
1—Kennedy No. 25½ type S gyratory crusher, gearless type with 40 HP motor.
1—Kennedy smooth roll crusher, 24″ x 10″, chrome steel.
1—Kennedy 4′ x 60′ rotary kiln, ½″ all welded complete with 10 HP motor and drive.
2—Kennedy type "A" 3′ x 8′ single and double deck vibrating screens, MD.
4—Kennedy Van Saun No. 3 bucket elevators, 25′, 37′, 37′6″, 45′5″ complete with enclosed buckets, motors and reducers.

1—Raymond flash dryer, complete with No. 40 Imp mill, 40 HP motor.
1—Kennedy 36″ disc feeder, rated ½ ton per hour.
1—Acme 9″ x 16″ manganese jaw crusher, 30 HP motor.
3—Buflovak all monel evaporators, 145, 293, 495 sq. ft. area with calandrias, condensers, settlers, ejectors, interconnecting piping, etc.
24—Worthite, Duriron, Deming, and Lawrence monel, hastelloy, and CI pumps, 1″ to 3″.
1—Lot Chlorine equipment including evaporator (hot water), flow meters, etc.
1—Hersey 3′ x 24′ monel counter current oil or gas heated dryer, complete.

3—Bins 500 to 2000 cu. ft. all steel bolted heavy duty.
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1—John Reiner Model GCG combination gasoline and natural gas powered generating set rated 15 KW.
22—Extra motors, some brand new, from 1½ HP to 40 HP.

*Used Less than 6 months.
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18″ x 36″ Jaw, Traylor.
3XC Hammer, Gruendler.
5-roll Raymond, high side.
48″ Symons, vert. disc.
Size 1, Allis-Chalmers.

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9′ x 80 x ⅝″.
7′ x 160′ x ⅝″ (2).
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7′ x 60′ x ⅜″ with lifters.
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23″ x 12′ Pug, double shaft, L.B.
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5′ x 22′ Tube, Smidth.
6′ x 8′ Abbe, ball.

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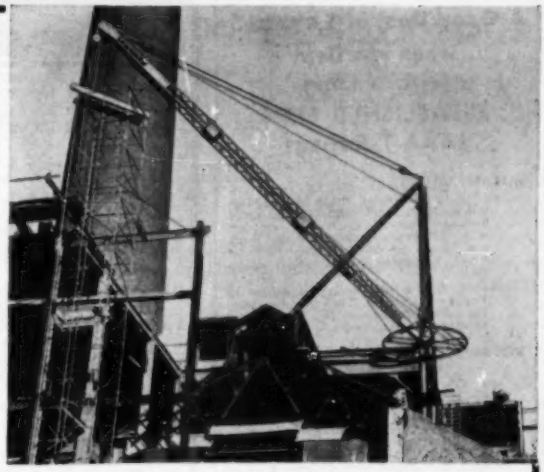

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1¼ yd. Bucyrus Erie Mdl. 33-B, Ser. 16502, 8 cyl. "V" type LeRoi gas eng. (eng. new 1948). 50' boom.

¾ yd. LS-85 Link Belt, year 1946, Cat. D-4600 Diesel eng., 40' boom.

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- 100 HP American 2/drum, 6 cyl. Waukesha gas eng., 10,000# @ 270 FPM. With or w/o attached swingers.
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¾ yd. P&H Mdl. 255A Crane, gasoline engine, hydraulic controls. Good operating condition.

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25 ton Industrial Brownhoist Type G #4369, 40-50-60' boom, Natl. Bd. Boiler 150#.

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6—Link Belt Roto-Louvre Dryers: #207-10 (2′ x 7″ x 10′) #310-16, #503-10, #604-20, two #604-24.

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Jaw—2″ x 6″, 6″ x 15″ Sturtevant; 18″ x 36″ and 24″ x 36″ Farrel; 42″ x 48″ Traylor; Rolls: 42″ x 16″ Allis-Chalmers Type B; 24″ x 32″ Penns, single roll. Portable Plants—Cedar Rapids 1085-BBB; 2540-AAAA, 2036-AAA, also Pioneer with 30″ x 42″ primary and secondary crushers, all Diesel driven.

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1—5 roll Raymond High Side.

6—#1, #0, #00, #000 Raymond Mills.

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6—Hardinge Mills, 3′ x 8″, 5′ x 22″, 6′ x 22″, 8′ x 48″.

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1—3′ x 6′ Colorado Iron Works, 1-deck.

2—4′ x 10′ Tyler Niagara, 2-decks.

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2—2 stage Washing Classifiers, each with two rakes in tandem, in steel trough 26′6″ long x 3′ wide, with drives.

Also Shovels, Cranes, Draglines; Jaw, Gyratory and other Crushers; Symons and Telsmith Cones; Complete Portable Crushing Plants; Rotary Kilns and Coolers; Air Compressors; Conveyors; AND FULL LINE OF CHEMICAL PROCESS EQUIPMENT.

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2—Reeves 7′ x 160′ x ⅝″ Rotary Kilns.

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2—Reeves 7′ x 120′ x ⅝″ Rotary Kilns.

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1—Vulcan 8′ x 80′ x ⅝″ Rotary Kiln.

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8—Tyler Hummer Screens 3′ x 15′, 3′ x 10′, 3′ x 5′.

1—Dixie #3650 Premier Hammer Mill, 100 HP motor.

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400	*Westgh.	CS	1800
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Size	Make	Type	PSI	Displ.
12x11	Worth.	HB	100	426
10x11	Worth.	HB	100	294
9x9	Worth.	HB	100	211
8½x9	Worth.	HB	100	170
7x7	Worth.	HB	100	122
7½ HP	Worth.	AT833	100	85
10 HP	Worth.	AU933	100	48.8

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These Engines are in good operating condition.

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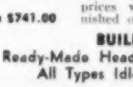

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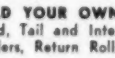

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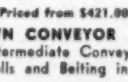

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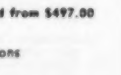

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H.P.	Winding	RPM	List Price	Sale Price
¾	Comp. & Shunt	1750	$276.10	$100.00
5	Shunt	1750	438.95	165.00
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7½	Comp.	1200	700.00	225.00
15	Comp.	1150	937.00	380.00

3-roll Troughing Idlers for these sizes:

14" belt	$16.50	30" belt	$19.50
16" belt	17.25	36" belt	20.25
18" belt	18.00	42" belt	21.00
24" belt	18.75	48" belt	21.75

1-roll Return Idlers for these sizes:

14" belt	$6.38	30" belt	$8.25
16" belt	6.75	36" belt	8.75
18" belt	7.13	42" belt	9.50
24" belt	7.50	48" belt	10.25

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Rust proof ball races; maintenance is negligible.

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24"	4	1/8"	1/32"	28 oz.	3.25/ft.
30"	4	1/8"	1/32"	28 oz.	3.97/ft.
36"	4	1/8"	1/32"	28 oz.	4.70/ft.
48"	4	1/8"	1/32"	28 oz.	6.16/ft.

Stock Models of All Types for Immediate Shipment—Special and Unusual Conveyors Built to Order—Complete Systems Designed, Engineered and Manufactured

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Manufacturers of Truck Scales, Vibrating and Shaker Screens, Crushers & Feeders
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MCLELLAN STONE COMPANY
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Dryers, Aggregate Hoppers, Steel Storage Tanks, Bucket Conveyors, Pug Mills, Scales, Boiler, Pumps, Electric Motors, Exhaust and Dust Collecting System. Will sell entire Plant or any part. Structure also available.

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For Sale or Rent

1—P & H Model 855 Crawler Shovel, 2 yd. capacity, Cat. Diesel power. Reconditioned. Crane boom available.

1—P & H Model 700 Crawler mounted Crane, 1½ yd. capacity. Gas power. Good all-around condition.

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1—Bay City Model 45 ¼ yd. Crawler Hoe-Shovel-Crane. Late model in perfect condition. Cat. D318 or GM Diesel power.

1—Link Belt Speeder Model D-4 Crawler Crane, 35 ft. boom, 16" crawler shoes, Cat. D-7700 engine. Reconditioned.

1—Bay City Model 30, Heavy Duty ½ yd. Crawler Shovel or Hoe. Gas power. Reconditioned.

1—Bay City Model 25, ½ yd. Crawler Hoe or Shovel. Late Model. Gas power. Rebuilt.

1—Bay City Model 15-T-40 Cranemobile ½ yd. capacity. Late model. Excellent condition. Hoe attachment available.

1—Browning Truck Mounted Crane 10 ton capacity Model E," powered by Cummins diesel and mounted on 10 wheel Mack chassis. First class condition throughout.

1—Universal Truck Crane, 28 ft. boom, mounted on A. C. Mack Chassis. Single axle rear.

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Clamshell Buckets, ⅜ to 2 cu. yd., also several Crane Booms—Trench Hoes and Shovel Attachmest — Assorted makes.

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Check on what you may require.

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Walnut St. & B. & O. R.R.
Roselle New Jersey
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Model 880 Jr. Gravelmaster CRUSHING PLANT
CRUSHERS: 15x36 & 20x36 CR, 24x36 Farrell, 24x 50 Champion, 48x36 Farrell, 42x48 Traylor & 48x 60 Superior JAW. 21D, 25 & 27 Kennedy, 16B & 20A Telsmith, 7 & 10" Newhouse GYR. 2 & 3' Symons std. & shorthead CONE.
5x24", 54"x30 6x25 & 6x50' ROTARY DRYERS.
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SHOVELS: Bay City 25, Buckeye 76, Link Belt LS75, NW 25 & 6, Marion 7, Lorain 77, Bucyrus 75B, Lima 802 & 1201
Dwight Lloyd Sintering Machine 42" x 40'
Two—Mack & Intl. Tractors & Freuhauf Dump Trailers
LOCO: 45 ton Diesel Elec. 83 ton Steam Switcher.

MID-CONTINENT EQUIPMENT CO. INC.
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2 ROTARY KILNS ½ IN. THICK
7' x 5'6" x 60' LONG
LOCATED IN ARKANSAS
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WANTED FOR CASH

Model CH Load-Lugger, L-F Dumpsters and Buckets

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Champion 1030 jaw crusher, roller bearing
Traylor type H 9" x 16" jaw crusher
Grundler 2XA hammermill, anti friction
Stedman B-30 hammermill, 30" x 24"
Penna. SXT-8 hammermill with 125 hp. motor
Double roll crusher, 24" x 14", smooth faces
Bonnot double roll crusher, 24" x 30"
Robins double roll crusher, 18" x 24"
Mead-Morrison single roll crusher, 24" x 30"
Double roll cinder crusher, 12" dia. 18" face
Sturtevant Fine Crusher 00 with 2 hp. motor
Hunt double drum Tandem hoist, no motor
Sullivan Single drum 7½ hp. electric hoist
Ing. Rand double drum 5 hp. electric hoist
American Standard 24" disintegrator
Overhead electric and air hoist
40 hp. 115 volts DC motor, 3/60 450 volts, 31.3 KVA Alternator
Motors to 125 hp., gearmotors and reducers
Gears, chain, sprockets, V belt pulleys
Single deck 4' x 6' vibrating screens
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New Universal Screens in stock
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Trough idlers 14", 16", 18" and 24" wide
New and used conveyor belt up to 36" wide
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PORTABLE HOT PLANT DRYER

One dryer, aggregate, dual drum, 80 to 150 tons per hour. Trailer mounted. Manufactured by Barber-Greene Company—Model #833.

This particular machine was used by the Corps of Engineers to dry and heat aggregate for bituminous material. This machine is war surplus, having been in overseas service—needs work. This machine has not been used much but is rusty and needs some sand blasting, etc.

Weight 40,000 lbs.—Price F.O.B. cars San Jose, California, $3,750.00.

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SILICA — ALMOST 100 PERCENT PURITY BY ANALYSIS

Have estimated 50,000,000 tons which can be mined open cut or drift. Property located in Fayette County, Pennsylvania on Baltimore and Ohio R. R. Siding on property. Will lease on royalty basis. Owners — M. & A. Sugarman, P. O. Box 109, Coatesville, Pennsylvania.

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BLASTING AND COMMUNICATION WIRE

U. S. GOVERNMENT SURPLUS

1 Mile — $10.00

On Steel Reels

Signal Corps W 110B, 2 conductor, 3 copper, 4 steel, rubber and weatherproof wire.
F.O.B. TRENTON, N. J.
NO CHARGE FOR REEL

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All Sections — New and Relaying

Also frogs, switches, spikes, bolts, and all class of track accessories available.

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1½" and 2" single action, ten inch stroke, heavy duty, $8.50 and $12.50 each. Also have valves and pumps, $16.00 and $25.00.

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SPECIAL OFFERING

1—New Acme 16" x 5' heavy duty reciprocating feeder —stock delivery

1—Factory rebuilt Acme 18 x 32 Jaw crusher.

ACME ROAD MACHINERY COMPANY
Frankfort, New York

FOR SALE

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1—Vulcan 14 Ton Diesel—30" Ga.
2—Plymouth 8 Ton Gas Std.—Ga.
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1—Brookville 10 Ton Diesel—36" Ga. Like New.
2—Whitcomb 15 Ton Diesel—36" Ga.
1—Plymouth 8 Ton Gas—30" Ga.
1—Whitcomb 30 Ton Diesel—Std. Ga.
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3—UNUSUALLY NICE 50 TON TWIN HOPPERS CROSS DUMP.

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21—15 Ton Hopper 36" Ga.
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Bridgeford Axle Lathe.
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4—New 450 HP Electric Machinery Mfg. Co., 4160 volt, 180 RPM, 3 phase, 60 cycle, synchronous motors.
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1—New 9'-6" dia. by 11' long Nordberg dry ball mill.

Inspection at your convenience any time. Phone, wire or write.

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2036 Cedarapids AAA portable primary, diesel power.
1036/2418 Cedarapids Jr. Tandem on rubber.
Cedarapids Rock-It plant w/3035 jaw, 3033 hammermill.
4033 Cedarapids Model 9C plant. New.
2020 Cedarapids double impeller. New condition.
4024 Cedarapids roll. Rebuilt.
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60" dia. x 14' Traylor revolving screen. Rebuilt.
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15 cu. yd. Cedarapids sand drag. New.
16" x 80' bucket elevator.
60-ton, 2-comp., 8'x18' storage bin w/slam gates. Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.
24" Dia. x 30" face magnetic pulley.

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Lorain 77. 1¼-yd. diesel.
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Lorain L-50-L. 1-yd. diesel.
Lorain 40 truck crane on Mack 3-axle truck.
Lorain MC-2 Moto-Crane.
Link Belt L885 diesel combination.
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Lorain 30A, ½-yd. gas combination.

WELL DRILLS & TOOLS

Sanderson-Cyclone No. 42 well drill, new.
Sanderson-Cyclone No. 44 well drill, new.
Used Sanderson-Cyclone Model 42 on Dodge Truck.

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45" Ohio lifting magnet, rebuilt.

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500 cu. ft. Gardner-Denver diesel, rebuilt.
365 cu. ft. Gardner-Denver diesel. Rebuilt condition.
105 cu. ft. Schramm, was powered on 4 steel wheels.
Worthington 2-stage, water-cooled, vertical 250S. 80 CFM, new condition.

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Phone Harrisburg 7-3431

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ELECTRIC: 600, 1500, 1722, 2050, 2170 & 2700 Ft.
DIESEL: 105, 315, 450, 600, 625, 807 & 1000 Ft.

CRANES — DRAGLINES — SHOVELS

9—Elec. Shovels, 17, 10, 8, 4, 2 & 1 Yd.
4—Walker Draglines, 2-4-9-16 Yd.
9—35 & 40 Ton 126 Ft. Boom Whirlers.
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8—Diesel Shovels & Cranes, 1 to 5 Yds.

DUMP CARS

46—KOPPEL, 1½ Yd., 24 & 30 & 36 & 42 In. Ga., V Shaped.
110—2 Yd., 3 Yd., 4 Yd., 36 In. Ga.
60—8d. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
6—10 Ton Phoenix Quarry cars-std. ga.

GRINDING MILLS

Hardinge 5'x22", 6'x22", 8'x22", 10'x30" & 10'x48".
Ball Mills 6x6, 6x10, 7x8 & 8x6.
Rod Mills 4x7, 5x14.
Tube Mills 3x19, 5x22, 5½x20 & 6x22.

PULVERIZERS

Hercules Junior 3 Roll Mill.
#1 & 2 Raymond Automatic.
B&W and Riley Coal Pulverizers.
9412 Raymond Bowl Mill.

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5', 8', 14' & 16' Air Separators.
6'x14' Hardinge Counter Current.
Dings Magnetic Type IR 2 Stage 60".
Dorr 40' Dia. x 30"—3 Tray, 4 Comp. Thickener.
Standard Thickeners—12' to 60' Dia.
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HAMMER MILLS

Jeffrey 20x24 R, 24x30 B, 42x36.
Williams 520 Slugger & 36, 5 & 7 Jumbos.
Cedar Rapids 2033, 3033 & 4033.
Gruendler 1XB, 2XD & 3XD & 6XD Reversibles.
Pennsylvania: C-4-30, 8XC-15-58, 8XT-11 & 13.
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ROTARY DRYERS & KILNS

60"x35' & 70"x67' Ruggles Coles XB Indirect.
Double Shell: 70"x20' & 70"x47'.
Single Shell: 4x20, 4x45, 5x50, 6x35.
Kilns: 4x45, 6x50, 7½ & 7x60, 8x80 & 9x125.

BLAST HOLE & WELL DRILLS

Loomis 44, Karstone 51 & 71.
10—IR—FM2—Wagon Drills.
1—Bucyrus Erie 39T Diesel.

JAW CRUSHERS

Blake Type 42x60, 30x36, 24x36, 18x36, 13x30, 12x24, 12x16.
Single Shaft—18x36, 15x36, 15x30, 10x49, 10x30, 10x20.
Cam & Roller—24x49, 14x26, 11x26, 10x20, 6x36.

GYRATORY FINE REDUCTION CRUSHERS

Newhouse 7", 10", 14"—Kennedy 10S, 20S, 27S—Sup. McC. 6"—A1. Chal. 222B, 333B, 538B—Traylor TY 30".

GYRATORY STD. REDUCTION CRUSHERS

6", 10", 14" & 20" Sup. McC.—Gates A1. Chal. #2, 4, 5, & 7½, 9, 9, 11.
Parts for 42" Superior McCully.

STEEL DERRICKS

GUY: 6 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 125 Ft. Boom.

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15—2000, 10,000 and 20,000 gal. cap. with coils.

RAILROAD CARS

100—2000 & 10,000 gal. cap. Tank Cars.
100—50 Ton & 70 Ton Battleship Gondolas.
20—50 Ton Cap. Flat Cars.
10—Side Dump covered 70 ton Hopper Cars.

LOCOMOTIVES

DIESEL: 15, 20, 25, 35 & 100 Ton.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 20 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 7 Ton, 8 Ton, 17 Ton & 40 Ton.

CONVEYOR BELTS

6000 Ft. 36, 42, 48 & 60 In. Wide.

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HUMMER, NIAGARA & ROBINS, LINK BELT.

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1—Vulcan Rotary Kiln, 7' x 120'.
1—Dorr Classifier, 4½' x 16'4".
1—Hardinge Thickener, 25' x 10'.
1—Hardinge 25' Clarifier, Series B, Type 4.
1—Hardinge 4" Diaphragm Pump.
1—Orville Simpson #41 Rotex Screen.
4—Mikro Pulverizers, #1-6H, #2-TH, #3-TH and #3-W.

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Wire screen manufacturing plant for making screens for quarry and plants; vibrating and equipment press; loom flat top dies; new indexing system.

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2 Double Beam Butler Aggregates Batchers, 3000 lb. each beam. Each $750.00

1 Bulk Butler Cement Batcher 1000 lb. beam 500.00

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1 Columbus drag type sand washing and settling tank 18 ft. long, 24 in. flights, without drive 500.00

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Subject prior sale or disposition.

SCIOTO LIME & STONE COMPANY, INC.
Delaware, Ohio

DEPENDABLE USED MACHINES

Special.—Late model Gruendler 10x36 roller bearing jaw crusher with A-C power unit; new jaws.

Lorain 40 shovel
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P&H ⅛ yd. crane
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4x8, 3x10, 4x10 2-deck screens
3 yard Dumpcrete
20x40 port. conveyor
45 ton port. bin
Eagle cinder crusher
Butler fork truck

These machines reconditioned in our newly-built daylight plant. Come see them!

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12–4" Heavy Duty Bingham vertical sand pumps
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1—International size p6-S piston type pump
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1—Weinman 1½" horizontal single stage centrifugal pump
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1—Ruggles-Cole, type RH-12' dia. steel cyclone dust collector

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1—**Acme #3½A Jaw Crusher, 9x16, 20 HP motor.**
1—**Hardinge Conical Ball Mill 4'6" dia. x 24".**
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CRUSHING ROLLS—16" x 16" up to 54" x 24".
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SWING HAMMER MILLS.
ROTARY PINE CRUSHERS—21, 21½ and 22.
DIRECT HEAT ROTARY DRYERS—3' x 35', 4' x 30', 5' x 50', 7½' x 60'.
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Hardinge, Marcy & Fuller-Lehigh mills.
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TUBE ROD & BALL MILLS—4' up to 7' dia.
AIR SEPARATOR—5', 6', 8', 14' dia.
1—Complete Lime Hydrating Plant.
1—500-1100 & 1500 bbl. Cement Plant.
New—Used & Rebuilt Kilns—Coolers—Dryers.

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With GMC 471 engines, good tires, 6-8 yd. bodies. Ready to go. $4250.00 each (3) at Boise, Idaho and (3) at Kansas City, Mo.

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SIMPLICITY 4x12 Four deck Screen w/15 hp. motor and drive. A1. $2250.
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PIONEER 24"x60' lattice Conv. w/ electric motor, drives, and belting. A1. $1350.
PIONEER 24"x45' channel frame Conveyor, w/motor, belt, drives. Excel. $950.
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UNIVERSAL 293QH Plant with 18x24 r.b. Jaw, 2x6 apron feeder, No. 3 hammermill, wheel return conveyors, screen, mounted tandem axles pneumatic tires. Rebuilt. $16,000. Terms.
IOWA 10x24 p.b. Jaw Crusher. A1. $650.
IOWA 10x20 p.b. Jaw Crusher. Exc. $450.
IOWA 40x22 Hammermill. $2250.

WENZEL MACHY. Co.
2136 Jefferson St.
Kansas City, Mo.
Phone: Harrison 0021

13-B Telsmith Gyratory Crusher
10-24 Ball Bearing Jaw Crusher
10-36 Ball Bearing Jaw Crusher
14" x 26" Acme Jaw Crusher
10" x 20" Jaw Crusher
¾ Yd. Byers Shovel, old
Koehring Gas Dumpster
100 H.P. Motor. 150 & 200 H.P.
75 H.P. Motors—and smaller motors.

BLUE BALL MACHINE WORKS
Blue Ball, Pa.

FOR SALE

ONE (1) Model 44 Loomis "Clipper" Well Drill, Gasoline engine driven, full length crawler with ¾" wire line and complete string of tools.
ONE (1) Model 44 Loomis "Clipper" Well Drill, 440 volts 3 phase, 60 cycle electric motor driven, full length crawler with ¾" wire line and complete string of tools.
Fishing tools, extra stems, bits, sockets, ¾" wire rope and miscellaneous spare machine parts are available.
These machines can be seen in operation at our plant at "LIME CREST", New Jersey and one or both machines will be available for sale during July, 1953.

LIMESTONE PRODUCTS CORPORATION OF AMERICA
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100' boom Fairlead & high gantry frame for 54-B
2½ Yd. Page drag bucket
Twin GMC Generator set
Murphy ME-66 Generator set
LS-85 Link Belt Speeder shovel front
303 Koehring shovel front
35 ft. P & H Model 155, Crane boom
25 ft. Michigan Crane boom
32 ft. totally enclosed bucket elevator
9" x 16" buckets and numerous other items, such as hammermills, power units and screens of various sizes.

Concrete Materials & Construction Co.
Granby Building — Cedar Rapids, Iowa

FOR SALE

Unloading and Storage Plant, 1½ car capacity for bulk cement, aggregate, grain, etc. 10 tons or more per hour bucket type elevator 77' high.

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TRANSIT MIXERS

Smith 2 yd. Hi-Discharge Mixer, used 500 yds., no truck @ $2000.00.

Smith 3-Yd. Hi-Discharge Mixer w/ White Truck.

Rex 2 yd. Hi-Discharge Mixer w/Ford Truck @ $1500.00.

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Sargent "38" ⅜ yd. Trench Hoe, mounted GMC 6x6. Demonstrator. Discount.

Schield-Bantam M-47 Hoe—Dragline —Shovel, mounted '47 Chev. Tandem with Outriggers @ $4250.00.

Schield-Bantam M-47 Hoe & Crane, mounted on Half Track @ $4500.00.

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Gas electric starting, complete
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Caterpillar D-2 Diesel Tractor w/ Traxcavator @ $2000.00.

Hough "HL" 1-Yd. Payloader, Gravity Dump. Reconditioned @ $2775.00.

Halsa "77C" Crawler Bucket Loader. Reconditioned @ $3750.00.

Cletrac "DDH" Diesel Tractor w/Drott Hi-Lift Front End Loader, 1⅛ yd. Bucket @ $4250.00.

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Smith 3-Yd. Hi-Discharge Mixer w/ White Truck.

Rex 2 yd. Hi-Discharge Mixer w/Ford Truck @ $1500.00.

Rex 2 yd. Hi-Discharge Mixer w/ Chevrolet Truck @ $2000.00.

Jaeger 2 yd. Hi-Discharge Mixer w/ Chevrolet Tandem Truck @ $2895.00.

Rex 3-Yd. Hi-Discharge Mixer, unmounted @ $2000.00.

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Sargent "38" ⅜ yd. Trench Hoe, mounted GMC 6x6. Demonstrator. Discount.

Schield-Bantam M-47 Hoe—Dragline —Shovel, mounted '47 Chev. Tandem with Outriggers @ $4250.00.

Schield-Bantam M-47 Hoe & Crane, mounted on Half Track @ $4500.00.

MISCELLANEOUS

Trailer, Tag-A-Long, 9.00 x 20 tires (8-ton) @ $450.00.

Cedarrapids Portable Primary Plant on Pneumatices w/1524 Jaw Crusher, 24" x 6'0" Apron Feeder, gas power, 30" discharge conveyor, etc. @ $6000.00.

Universal 880 Jr. Portable Gravel Plant, 1024 Jaw, 24 x 16 Rolls, etc. @ $15000.00.

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1—36" FC Telsmith Gyrasphere Crusher complete with drive and Caterpillar D 13000 Diesel Engine. This machine has been operated 577 hours.

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At the Bear Creek Lime Quarry 6 mil... Hiway 13 and then 1 mile South, Bolivar, Springfield; Gruendler 20x36 jaw crushe... feeder w/hopper; Gruendler 3XB hamm... 5' reciprocating feeder; Seco 4x12 3-de... lattice frame Universal anti-friction co... 24"x52'; No. 5 and No. 3 American spec... lar D318 power units; 1 IHC UD6 pow... shovel w/½ yd. shovel, 6BZ Waukesha ... 105 compressor; CMS 3" pump; Joy LM... welder; '52 Dodge ½ ton pickup; '51 G... IHC ¾ ton pickup; three '42 dump truc... ment, drilling and blasting equipment, w... tools and office equipment; all of this eq... dition; inspect the equipment at the quar... wire—call auctioneers for sale bill; ... TIVELY SELLS TO THE HIGHEST ... MINIMUM OR RESERVATION!!!

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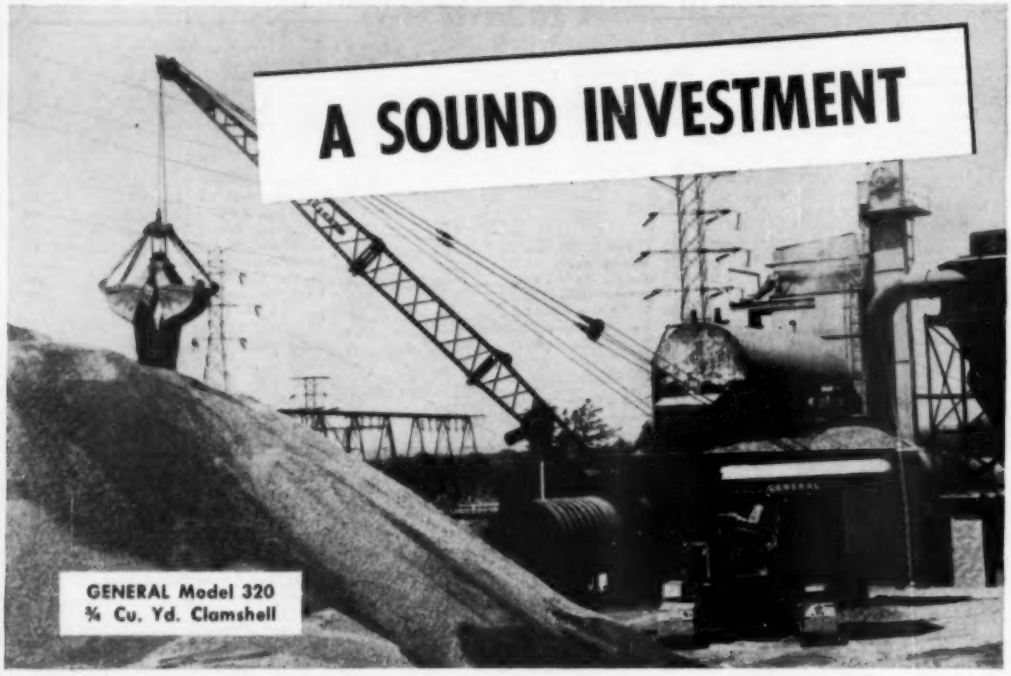

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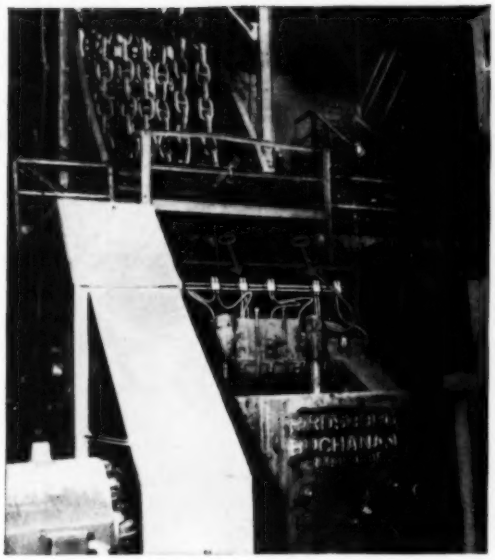

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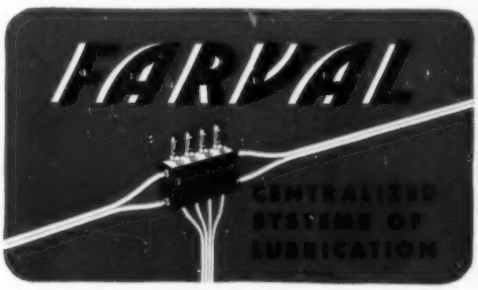

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